Vol. 1070 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

September 2, 1986

U.S.
DEPARTMENT
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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

September 2, 1986 Volume 1070 Number 1

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

Note that the amount of the international search fee for the European Patent Office and the amounts of the International PCT fees will change effective June 1, 1986. For information on these fee changes see the notice appearing in the *Official Gazette* at 1065 O.G. 41 on Apr. 29, 1986.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before June 1, 1986	830.00
if paid on or after June 1, 1986	930.00
International fees	
Basic fee (first 30 pages):	
if paid before June 1, 1986	325.00
if paid on or after June 1, 1986	375.00
Basic Supplemental fee (for each page over 30):	
if paid before June 1, 1986	6.00
if paid on or after June 1, 1986	7.00
Designation fee for the first 10 national or regional offices:	
if paid before June 1, 1986	80.00
if paid on or after June 1, 1986	90.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Mar. 31, 1986. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of July 1986

Affirmed	190
Affirmed in Part	24
Reversed	86
Total	300

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Aug. 30, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,400,829 through 4,402,090
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JUNE 15, 1986, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 31,968	06/620,637	8/13/85
(4,335,266)	(06/221,761)	(6/15/82)
4,334,338	06/220,691	6/15/82
4,334,355	06/236,004	6/15/82
4,334,372	06/259,902	6/15/82
4,334,384	06/232,408	6/15/82
4,334,457	06/277,705	6/15/82
4,334,504	06/273,927	6/15/82
4,334,527	06/223,253	6/15/82
4,334,529	06/253,944	6/15/82
4,334,611	06/218,504	6/15/82
4,334,684	06/262,025	6/15/82
4,334,753	06/264,304	6/15/82
4,334,754	06/229,826	6/15/82
4,334,823	06/217,154	6/15/82
4,334,850	06/219,436	6/15/82
4,334,891	06/270,813	6/15/82
4,334,897	06/237,292	6/15/82
4,334,914	06/234,104	6/15/82
4,334,969	06/279,737	6/15/82
4,334,997	06/231,959	6/15/82
4,335,010	06/230,761	6/15/82
4,335,067	06/263,349	6/15/82
4,335,075	06/218,934	6/15/82
4,335,091	06/281,844	6/15/82
4,335,112	06/245,568	6/15/82
4,335,134	06/225,548	6/15/82
4,335,140	06/232,565	6/15/82
4,335,146	06/230,702	6/15/82
4,335,165	06/245,942	6/15/82
4,335,166	06/262,424	6/15/82
4,335,212	06/274,702	6/15/82
4,335,243	06/243,031	6/15/82
4,335,247	06/237,273	6/15/82
4,335,265	06/216,886	6/15/82
4,335,310	06/226,847	6/15/82
4,335,332	06/230,362	6/15/82
4,335,370	06/265,726	6/15/82
4,335,386	06/222,241	6/15/82
4,335,416	06/234,209	6/15/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,388,509, Re. S.N. 880,946, Filed June 25, 1986, Cl. 200/157, SYNTHETIC-RESIN AND METALLIC LAYERED HOUSING FOR HAND-HELD APPLIANCE, Roland Ullmann, et al., Owner of Record: *Braun-AG, Frankfurt, Germany,* Attorney or Agent: Scott R. Foster, et al., Ex. Gp.: 243

4,442,701, Re. S.N. 853,280, Filed Apr. 17, 1986, Cl. 73/32R, METHOD FOR MEASURING DENSITY OF A BULK MATERIAL IN A STOCKPILE, David C. Cowherd, et al., Owner of Record: *Bowser-Morner, Inc., Dayton, Ohio,* Attorney or Agent: Thomas A. Boshinski, et al., Ex. Gp.: 265

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Pleasure-Rest, Inc., Houston, Tex., Reg. No. 1,269,871, for the mark "SLEEP FACTORY", Canc. No. 15,181.

The H. P. Snyder Manufacturing Co., Inc., Little Falls, N.Y., Reg. No. 442,992, for the mark "ROLLFAST", Canc. No. 15,389.

Standard Food Products Corp., Long Island City, N.Y., Reg. No. 814,743, for the mark "POOLE'S", Canc. No. 15,430.

J. J. Corris, dba Under The Hood, Falls Church, Va., Reg. No. 1,199,963, for the mark "UNDER THE HOOD", Canc. No. 15,539.

Grizzly Inc., Vancouver, Wash., Reg. No. 949,752, for the mark "THE BOSS", Canc. No. 15,590.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

PATENT NOTICES

Certificates of Correction for the Week of Sept. 2, 1986

Re. 32,101	4,540,996	4,571,694	4,583,999
Re. 32,102	4,541,478	4,571,772	4,584,005
4,103,092	4,542,023	4,571,947	4,584,256
4,251,390	4,542,459	4,572,577	4,585,819
4,274,860	4,544,477	4,573,040	4,586,345
4,382,135	4,544,583	4,573,097	4,586,419
4,424,700	4,544,753	4,573,114	4,586,518
4,431,393	4,544,852	4,573,393	4,586,735
4,433,048	4,545,664	4,573,436	4,586,747
4,447,185	4,548,604	4,573,868	4,586,788
4,468,735	4,551,202	4,574,564	4,587,865
4,469,261	4,551,280	4,574,637	4,589,062
4,474,595	4,553,317	4,574,696	4,589,064
4,479,214	4,553,400	4,574,748	4,589,188
4,481,331	4,553,929	4,575,417	4,589,628
4,488,213	4,554,238	4,575,461	4,590,002
4,490,764	4,554,670	4,575,577	4,590,233
4,494,159	4,555,655	4,576,539	4,590,284
4,494,654	4,556,970	4,576,836	4,590,829
4,497,692	4,557,207	4,576,840	4,590,889
4,503,898	4,557,307	4,577,091	4,590,943
4,504,931	4,557,854	4,577,132	4,591,075
4,506,040	4,557,887	4,577,244	4,591,296
4,507,465	4,558,058	4,577,345	4,591,333
4,511,458	4,563,347	4,577,373	4,591,465
4,515,759	4,563,694	4,578,623	4,591,576
4,515,988	4,564,068	4,578,731	4,591,851
4,518,093	4,565,302	4,580,451	4,591,990
4,521,719	4,565,484	4,580,545	4,592,021
4,522,733	4,565,830	4,581,105	4,592,052
4,524,163	4,566,022	4,581,112	4,592,477
4,530,032	4,566,330	4,582,090	4,592,800
4,530,587	4,566,624	4,582,204	4,592,961
4,530,959	4,566,769	4,582,843	4,593,319
4,534,438	4,567,251	4,582,925	4,593,428
4,537,589	4,567,618	4,583,425	4,594,450
4,537,847	4,568,056	4,583,454	4,595,314
4,540,509	4,569,202	4,583,655	4,596,145
4,540,621	4,569,962	4,583,705	4,597,046
4,540,637	4,571,336	4,583,744	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7609
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2965
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1741
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4284
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-7040
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	The Free Library	(215) 686-5330
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2371
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 257-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF August 2, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	4-01-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-24-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-01-85
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-08-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	10-09-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	4-11-84
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	3-20-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	11-09-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	9-26-83
DESIGN, GROUP 290—K. L. CAGE, Director	2-06-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	8-24-84
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	12-24-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	5-21-84
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	2-25-85
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	1-02-86

Expiration of patents: The patents within the range of numbers indicated below expire during August 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,458,863 to 3,464,062, inclusive

Plant Patents . . . . . Numbers 2,914 to 2,917 inclusive

STATUTORY INVENTION REGISTRATIONS

PUBLISHED SEPTEMBER 2, 1986

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H116

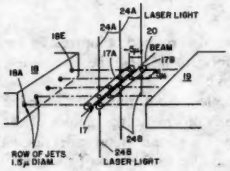
CHARGED PARTICLE ACCELERATOR GRATING

Robert B. Palmer, Shoreham, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 9, 1985, Ser. No. 773,755

Int. Cl.[4] H01J *3/14, 3/26*

U.S. Cl. 250—396 R **18 Claims**



1. A charged particle accelerator grating for accelerating particles along a particle beam path, said grating comprising first and second generally planar arrays of substantially parallel jet streams of droplets, said arrays of droplets being positioned in spaced relationship to one another, thereby to border a particle beam path containing charged particles positioned between said arrays, said beam path also being disposed generally transverse to the jet streams of droplets in both of the arrays, and means for exciting said grating of jet stream droplets to support an electromagnetic resonance thereon that is effective to accelerate charged particles along the beam path responsive to such particles being injected into the path.

H117

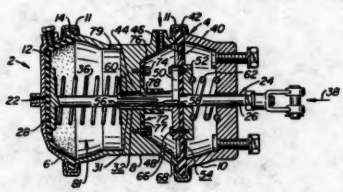
AIR BRAKE WITH COLLET LOCKED PUSH ROD AND COLLET DEACTUATOR

John M. Graham, 820 N. Delaware #308, San Mateo, Calif. 94401

Filed Feb. 12, 1986, Ser. No. 828,842

Int. Cl.[4] F15B *15/22*

U.S. Cl. 92—14 **1 Claim**



1. A pressurized fluid actuated brake comprising:

a brake housing defining a service brake chamber and a collet brake chamber;

a push rod mounted to the housing for movement between brake on and brake off positions;

means, including a service brake diaphragm operably coupled to the push rod and responsive to the presence of a pressurized fluid within the service brake chamber, for driving the push rod towards the brake on position when the service brake chamber is at a first pressurized state;

collet means, operably coupled to the push rod and responsive to the presence of a pressurized fluid within the collet brake chamber, for selectively restricting movement of the push rod towards the brake off position, said push rod restricting means including:

a collet having a bore, a radially deflectable portion surrounding at least a portion of the bore, said radially deflectable portion including an external surface;

said housing defining a collet bore having an internal surface sized and positioned for mating engagement with said external surface, at least one of said internal and external surfaces being tapered;

a collet brake diaphragm partially defining the collet brake chamber;

means for mounting the collet to the collet brake diaphragm for movement of the collet in response to the presence of pressurized fluid within the collet brake chamber so to bias said collet away from said collet bore to disengage said external and internal surfaces when the collet brake chamber is at a second pressurized state;

said push rod including a movement limiting bar partially housed within said bore and sized for complementary sliding engagement within the collet bore; and

spring means for driving the collet into the collet bore when said collet brake chamber is in a third pressurized state to lock the movement limiting bar in place thereby restricting movement of the push rod towards the brake off condition; and

means for selectively preventing the collet from moving toward the collet bore so to selectively prevent the engagement of said external and internal surfaces.

H118

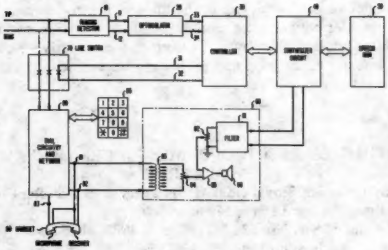
SYNTHESIZED SOUND TELEPHONE ALERTING MEANS

Ronald D. Biggs, Zionsville; Richard E. Waddell, Indianapolis, and Kenneth B. Woodard, Noblesville, all of Ind., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 11, 1984, Ser. No. 659,847

Int. Cl.[4] H04M *1/21*

U.S. Cl. 179—84 T **2 Claims**



1. A telephone including tip and ring input leads comprising:

a hook switch connected to said tip and ring leads and responsive to user controlled status of said telephone;

a ringing detector, connected to said tip and ring leads, for recognizing hailing signals on said tip and ring leads;

controller means responsive to said ringing detector and to said hook switch;

a read-only-memory for storing a preselected audio message;

a synthesizer, responsive to said read-only-memory and to said controller for developing an audio signal representative of said audio message; and

means for converting said audio signal to sound.

H119

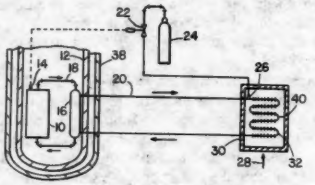
PASSIVE EMERGENCY CORE COOLING SYSTEM FOR A LIQUID METAL FAST BREEDER REACTOR

Alvin R. Keeton, Union Township, Washington County, and Michael G. Down, Plum, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 514,213, Jul. 15, 1983. This application Oct. 3, 1985, Ser. No. 783,335

Int. Cl.[4] G21C *15/18*

U.S. Cl. 376—299 **9 Claims**



1. A cooling system for removing heat from a heat source upon demand comprising:

(a) a heat source,

(b) a coolant loop for circulating a liquid coolant through the heat source for removing heat from the source,

(c) a heat exchanger in the coolant loop for removing heat from the coolant, the heat exchanger being constructed of duplex tubing having an inner tube for containing the flow of coolant and an outer tube concentric to the inner tube for rejecting heat to the environment, said outer tube being spaced from the inner tube to form a sealed annular gap therebetween to reduce heat conductivity between the inner and outer tubes, the coolant continuously flowing through the loop by thermal convection between the heat source and the relatively cooler heat exchanger,

(d) a source of pressurized gas, including control means, connected to the sealed gap in the duplex tubing for providing thermally conductive gas to fill the gap, and

(e) sensor means at the heat source for sensing a parameter indicative of a need for additional heat removal, said sensor means being connected to said control means for activating said control means to provide thermally conductive gas to the gap in the duplex tube to increase heat transfer between the tubes and reduce the temperature of the coolant thereby increasing the convective flow of coolant in the loop and increasing heat removal from the heat source.

H120

METHOD OF ELECTROFORMING A CERAMIC FACED WORKPIECE

John M. Corwin, Royal Oak, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Division of Ser. No. 520,782, Aug. 5, 1983, abandoned. This application Mar. 27, 1985, Ser. No. 716,306

Int. Cl.[4] B23P *17/00*

U.S. Cl. 29—421 M **6 Claims**

1. A method of joining a ceramic scuff disc to an end of a metal workpiece comprising the steps of:

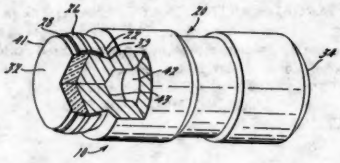
forming a frustum at the end of the metal workpiece; the frustum having two end planes, one small and one large; the small end plane of the frustum being located at the end of the metal workpiece and the large end plane of the frustum being available for mating with the ceramic scuff disc;

forming a frustum at one end of the ceramic scuff disc; the frustum having two end planes, one small and one large;

forming mating surfaces on the large end planes of the metal workpiece frustum and of the ceramic scuff disc frustum;

mating the ceramic scuff disc with the metal workpiece by joining the respective mating surfaces;

placing a metal sleeve over the peripheral edge formed by the juxtaposed mating surfaces;



applying a predetermined compressive longitudinal load to the assembly formed by the ceramic scuff disc and the metal workpiece;

electromagnetically deforming the metallic sleeve such that the sleeve conforms to the shapes of the frustums on the ceramic disc and the metal workpiece thereby trapping the ceramic disc to the end of the metal workpiece.

H121

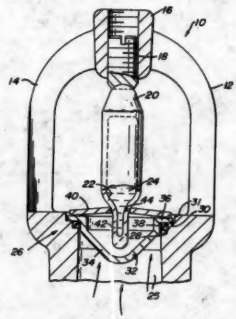
QUICK RELEASE VALVE FOR SPRINKLER HEAD

George S. Pieczykolan, North Wales, Pa., assignor to Central Sprinkler Corporation, Lansdale, Pa.

Filed Apr. 11, 1985, Ser. No. 722,084

Int. Cl.[4] A62C *37/08*

U.S. Cl. 169—37 **14 Claims**



1. Quick release valve for a sprinkler head having a valve flow passage and a valve seat, comprising:

a thermal responsive frangible element,

means for exerting a compressive preload on the frangible element including spring means for resiliently supporting said frangible element, and

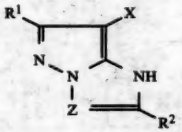
seal means mounted on the valve seat for sealing the valve flow passage including means for diverting fluid pressure to a peripheral region of said spring means.

H122
SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Toshio Kawagishi; Kiyoshi Nakazyo, and Masakazu Morigaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 19, 1985, Ser. No. 756,617
Claims priority, application Japan, Jul. 19, 1984, 59-150263
Int. Cl.[4] G03C *7/34, 7/32, 7/26, 1/26*
U.S. Cl. 430—546 **20 Claims**

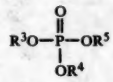
1. A silver halide color photographic light-sensitive material, which comprises a support having thereon at least one silver halide emulsion layer containing dispersed therein at least one magenta coupler represented by the following general formula (I):



(I)

wherein R^1 and R^2, which may be the same or different, each represents a hydrogen atom or a substituent, X represents a hydrogen atom or a group capable of being eliminated upon coupling with an oxidation product of an aromatic primary amine developing agent, Z represents a nitrogen atom or CR_6 where R_6 represents a hydrogen atom or a substituent and the magenta coupler may form a dimer or higher polymer at R^1, R^2, R^6 or X;

together with at least one high boiling organic solvent represented by the following general formula (II):



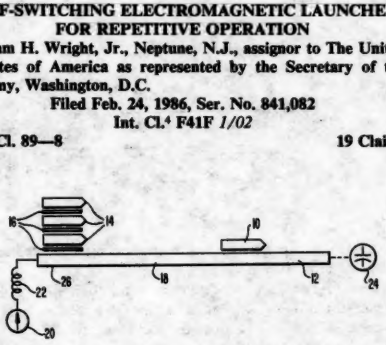
(II)

wherein R^3, R^4 and R^5, which may be the same or different, each represents an alkyl group, a cycloalkyl group, an alkenyl group or an aryl group, provided that the total number of carbon atoms in the groups represented by R^3, R^4 and R^5 is 12 to 60.

H123
SELF-SWITCHING ELECTROMAGNETIC LAUNCHER FOR REPETITIVE OPERATION

William H. Wright, Jr., Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 24, 1986, Ser. No. 841,082
Int. Cl.[4] F41F *1/02*
U.S. Cl. 89—8 **19 Claims**

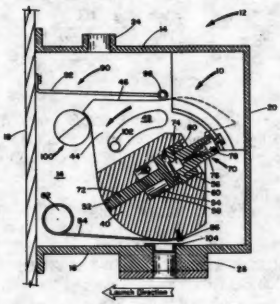


1. An electromagnetic launcher means having a breech and muzzle, a projectile with an insulating means, and having an energy source means for generating a break-down voltage to the insulating means.

H124
INITIATOR ASSEMBLY

Anthony P. Antonuzzi, Stoneham; William E. Hagel, Billerica; Donald M. Lawson, Lexington, all of Mass., and Richard S. Herman, Clifton, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 10, 1986, Ser. No. 835,855
Int. Cl.[4] F42C *15/18*
U.S. Cl. 102—254 **10 Claims**



1. In a missile system including a missile having user equipment powered by a compressed fluid, an assembly for passing compressed fluid to said user equipment from a source thereof, which comprises:

a housing having a gas inlet conduit means and a gas outlet conduit means, said gas outlet means being in fluid communication with said user equipment, one of said conduit means provided with a closure element;

a rotor member journalled for rotation in said housing, said rotor member formed of a mass of an eccentric weight distribution with respect to the axis of rotation of said rotor member;

an explosive assembly disposed in said chamber including a drive piston; and

a striking assembly means for activating said explosive assembly in a preselect position to cause said drive piston to fracture said closure element.

H125
ETCH AND POLISH FOR METAL HALIDES

Paul E. R. Nordquist, Jr., Alexandria, Va., assignor to United States of America, Washington, D.C.

Filed Dec. 23, 1985, Ser. No. 812,086
Int. Cl.[4] C09K *13/06;* **B44C** *1/22*
U.S. Cl. 252—79.4 **18 Claims**

1. A composition suitable for etching and polishing metal halides in an aqueous solution, comprising: p1 between about 1–30 percent by weight of boric acid; p1 between about 0.1–20 percent by weight of an acidfying agent; and p1 up to about 15 percent by weight of a complexing agent.

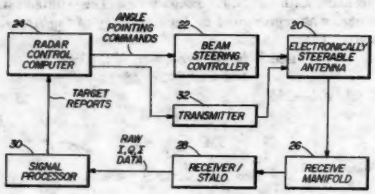
H126
RANDOM BEAM POSITIONING SURVEILLANCE PROCESS

Michael G. Allen, Clarksville; Howard Faecher, Baltimore, and Dennis H. McCallam, Randallstown, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 18, 1986, Ser. No. 841,083
Int. Cl.[4] G01S *13/00*
U.S. Cl. 343—16 R **20 Claims**

12. Apparatus for randomly positioning a scanned radar beam in a swath type of scan pattern over a predetermined area by an electronically steerable antenna, comprising:

computer means operable to generate at least one list of a plurality of beam positions which will insure full coverage of said predetermined area and including a memory for storing said list of beam positions;



means for randomizing said at least one list of beam positions and storing the randomized list in said memory; and

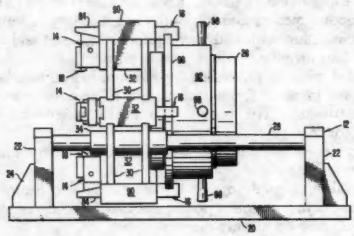
means coupled to said computer for controlling said electronically steerable antenna in accordance with the randomized list.

H127

GUN TUBE, SCREW THREAD, SECTORING DEVICE

Thomas V. Smith, Troy, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 26, 1985, Ser. No. 769,052
Int. Cl.[4] B23D *5/02*
U.S. Cl. 409—304 **6 Claims**



1. A gun tube screw thread sectoring device, comprising:

a carrier fixture means;

a plurality of clapper box assembly means, each clapper box assembly means of said plurality of clapper box assembly means being spaced apart and suitable removably affixed to said carrier fixture means;

a plurality of motion transmission means, each motion transmission means of said plurality of motion transmission means being spaced apart and suitably affixed to said carrier fixture means and each said motion transmission means being suitably slidably and removably affixed to each said clapper box assembly means; and

a plurality of cutting tool means, each cutting tool means being suitably and removably affixed to each said clapper box assembly means.

H128

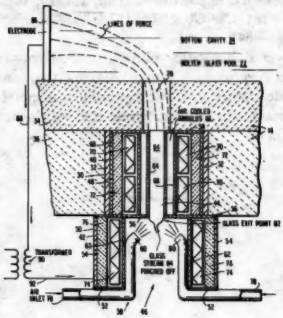
JET-CONTROLLED FREEZE VALVE FOR USE IN A GLASS MELTER

Kenneth R. Routt, Aiken, S.C., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 29, 1985, Ser. No. 759,774
Int. Cl.[4] C03B *5/26*
U.S. Cl. 373—35 **6 Claims**

1. A drain valve for controlling the flow of glass from a furnace for glass melting that includes a drain cavity, which comprises:

(a) a flow tube member having an inlet and an outlet, and including heating means and cooling means, said tube member being adapted to fit in mating relationship with said drain cavity; and



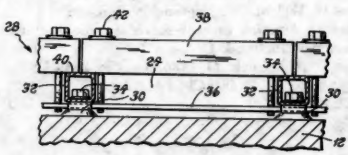
(b) a freeze valve member disposed at said outlet of said valve member including heating means and a plurality of air jets, said air jets being adapted to direct a stream of pressurized air at said outlet to control the flow of said molten glass through said flow tube member.

H129

MODULAR ARMOR SUPPORT

David N. Hansen, Joppa, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 29, 1986, Ser. No. 824,323
Int. Cl.[4] F41H *5/00*
U.S. Cl. 89—36.04 **6 Claims**



1. An armor support system for supporting armor panels on a substrate comprising:

at least first and second generally parallel bars;

means for affixing said at least first and second generally parallel bars spaced apart on said substrate;

at least one armor panel;

means for affixing said at least one armor panel on said at least first and second generally parallel bars; and

said first and second generally parallel bars including means for spacing said at least one armor panel a predetermined distance from said substrate.

H130
TETRAFLUOROETHYLENE HEXAFLUOROPROPYLENE COPOLYMER MODIFIED WITH PERFLUOROPROPYL VINYL ETHER

Daniel E. McDermott, Parkersburg, W. Va., and Stanley Piekarski, Marietta, Ohio, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 18, 1986, Ser. No. 830,850
Int. Cl.[4] C08F *16/24*
U.S. Cl. 526—247 **1 Claim**

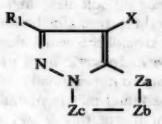
1. A perfluorinated terpolymer composition containing:
(a) tetrafluoroethylene
(b) between 9 and 17 percent by weight hexafluoropropylene.
(c) between 0.2 and 2 percent by weight perfluoro(propyl vinyl ether).

H131
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Nobuo Furutachi; Tadahisa Sato; Toshio Kawagishi, and Kiyoshi Nakazyo, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

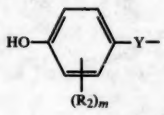
Filed Sep. 9, 1985, Ser. No. 773,892
Claims priority, application Japan, Sep. 7, 1984, 59-187315
Int. Cl.[4] G03C *7/34*
U.S. Cl. 430—553 **8 Claims**

1. A silver halide color photographic material characterized in that it contains a pyrazoloazole type magenta coupler represented by the following formula (I):



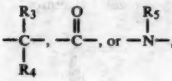
(I)

wherein R_1 represents a hydrogen atom or a substituent, X represents a hydrogen atom or a releasable group that can be released by the coupling reaction with an aromatic primary amine developer oxidation product, Za, Zb and Zc each represents a methine, a substituted methine, =N— or —NH—, one of the Za-Zb bond and the Zb-Zc bond is a double bond and the other is a single bond, when the Zb-Zc bond is a carbon-carbon double bond it may be part of an aromatic group, and a dimer may be formed by R_1 and X or a substituted methine of Za, Zb or Zc, provided that when Zc represents a methine or a substituted methine, Za and Zb do not represent at the same time =N— or —NH—; to which coupler at least one group represented by the following general formula (II) is bonded:



(II)

wherein R_2 represents a hydrogen atom, a halogen atom, an alkyl group, an aryl group, a heterocyclic group, a hydroxyl group, an acyl group, an alkoxy group, an aryloxy group, an acylamino group, a sulfonamide group, a carbamoyl group, a sulfamoyl group, a ureido group, an alkoxycarbonyl group, an alkoxycarbonylamino group, a sulfonyl group, an alkylthio group, an arylthio group, a cyano group, a nitro group, or a carboxyl group, Y represents —O—, —S—,

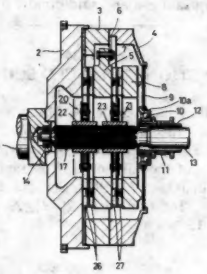


wherein R_3 and R_4 each represents a hydrogen atom, an alkyl group, a halogen atom, or an aryl group, and R_5 represents a hydrogen atom, an alkyl group, an aryl group, an acyl group, or a sulfonyl group, and m is an integer of from 1 to 4 and when m is 2 or more, the R_2's may be the same or different.

H132
TWIN-PLATE CLUTCH

Hisao Ohtani, 4-48, Heiwa-cho, Toyota-shi, Aichi-ken, and Satoru Maruyamano, 2-56, Ekakushinmachi, Toyota-shi, Aichi-ken, both of Japan

Filed Dec. 21, 1984, Ser. No. 684,578
Claims priority, application Japan, Dec. 28, 1983, 58-201932[U]
Int. Cl.[4] F16D *21/00*
U.S. Cl. 192—48.1 **1 Claim**



1. A twin-plate clutch comprising an annular intermediate plate interposed between a fly wheel and a pressure plate, a first clutch disc interposed between said intermediate plate and said fly wheel, and a second clutch disc interposed between said intermediate plate and said pressure plate, wherein said first clutch disc is provided with facings fixed to an outer circumferential portion of a disc plate thereof under a condition of no cushioning function in an axial direction of the first clutch disc, and said second clutch disc is provided with cushion springs fixed to an outer circumferential portion of a disc plate thereof and facings fixed on both sides of said cushion springs.

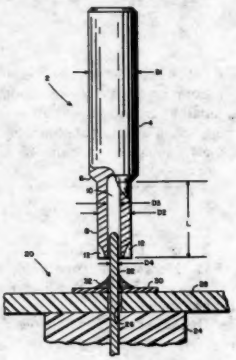
H133
PRINTED WIRING BOARD CIRCUIT ISOLATOR TOOL

Robert D. Huxsol, and Leon J. Snyder, both of Canoga Park, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 6, 1985, Ser. No. 698,726
Int. Cl.[4] H05K *3/30*
U.S. Cl. 29—832 **6 Claims**

1. A tool for isolating circuitry foil conductors formed on the surface of a printed wiring board from component pins inserted in said board and soldered to said conductors, said tool comprising:
a rotatable shank having a first and a second end;
a receptable means formed at said first end of said shank for receiving the extremity of a pin protruding through said

board and soldered to a conductor disposed on the surface of said board nearest said extremity of said pin; and

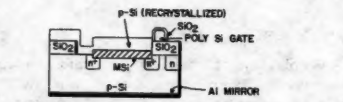


cutting means formed on said first end of said shank for removing metallic material on said board electrically connecting said pin and said conductor.

H134
BURIED JUNCTION ENHANCED SCHOTTKY BARRIER DEVICE

Lyn H. Skolnik, Albuquerque, N. Mex.; Sven A. Roosild, Reston, Va., and Freeman D. Shepherd, Jr., Chelmsford, Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 22, 1984, Ser. No. 643,139
Int. Cl.[4] H01L *29/48, 21/00*
U.S. Cl. 357—15 **10 Claims**



I. DEPOSIT p-POLYSILICON OVER EXPOSED SUBSTRATE AND MS DIODE.

J. LASER, e-BEAM, OR THERMALLY ANNEAL TO RECRYSTALLIZE SO THAT SINGLE CRYSTAL EPITAXIAL LAYER REGROWS OVER DIODE, FORMING A BACK-TO-BACK p-Si/MS DIODE STRUCTURE.

K. Al COAT BACK OR FRONT OF STRUCTURE (NOT BOTH) TO FURTHER ENHANCE OPTICAL ABSORPTION.

8. A buried junction Schottky barrier device comprising:

a semiconductor substrate;

a metal deposited on said substrate to form a first metal-semiconductor interface;

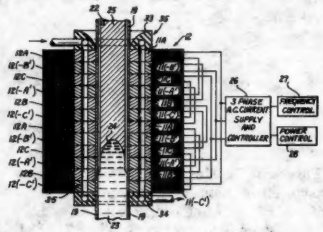
a semiconductor material disposed over the exposed surface of said metal to form a second metal-semiconductor interface; and

means for deriving signals from said first and second metal-semiconductor interface.

H135
ELECTROMAGNETIC LEVITATION CASTING APPARATUS HAVING IMPROVED LEVITATION COIL ASSEMBLY

John P. Wallace, 229 Park Ave., Broadway, Va. 22815, and Hugh R. Lowry, 700 Towne House Ave., Fairfield, Conn. 06430

Filed Jun. 19, 1984, Ser. No. 622,131
Int. Cl.[4] B22D *11/0, 27/02*
U.S. Cl. 164—502 **33 Claims**



1. Continuous casting apparatus comprising an elongated tubular casting vessel disposed in upright position to receive liquid metal for solidifiction, means for delivering liquid metal into a lower portion of the vessel, heat exchange means associated with the vessel for cooling and solidifying liquid metal therein, means for removing solidified metal from an upper portion of the vessel, and electromagnetic levitation field producing means disposed around the vessel along a portion of its length for reducing the hydrostatic head of the column and maintaining a predetermined dimensional relationship between the outer surface of the liquid metal column and the interior surrounding surfaces of the casting vessel to thereby effect maximum obtainable heat transfer between the liquid metal column and the casting vessel while simultaneously reducing gravitational, frictional and adhesive forces of the liquid metal column to a minimum, said electromagnetic levitation field producing means including magnetic field concentrating means comprised by a compact, closely stacked array of slotted annular slugs surrounding the portion of the length of the tubular casting vessel within which the liquid metal column is to be levitated, each of the slugs being insulating supported within the compact array, one from the other by a thin insulating coating and inductively coupled to a respective electromagnetic field producing coil having a large number of turns surrounding the slug whereby each slug serves to concentrate the magnetic field produced by the coil to substantially the interior cross sectional area of the portion of the tubular casting vessel it surrounds and functions as a current step-up transformer.

DEFENSIVE PUBLICATIONS

PUBLISHED SEPTEMBER 2, 1986

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T107,001

METHOD FOR CONTROL OF SOIL-BORNE INSECTS EMPLOYING THE PYRETHROID(2-METHYL-[1,1'-BIPHENYL]-3-YL)METHYL 3-(2-CHLORO-3,3,3-TRIFLUORO-1-PROPENYL)-2,2-DIMETHYLCYCLOPROPANECARBOXYLATE

Charles A. Staetz, 85 Hickory La., Newtown, Pa. 18940

Continuation of Ser. No. 513,480, Jul. 13, 1983, abandoned. This application Aug. 22, 1984, Ser. No. 643,106

Int. Cl.[4] A01N *53/00*

U.S. Cl. 514—531

No Drawing. 14 Pages Specification

The compound (2-methyl-[1,1'-biphenyl]-3-yl)methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate provides excellent initial and residual control of soil-borne insects when an insecticidal amount of the compound is applied to soil in which plants are or are to be planted. The cis or 1R, cis isomers are preferred for this purpose. The preferred application rate is in the range of 0.25 to 1.5 kg/ha.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

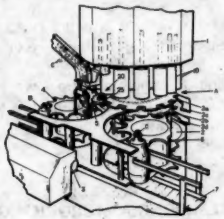
Re. 32,237
CLOSURE PRE-TIGHTENER FOR CLOSURE APPLICATING MACHINES

Wendell D. Willingham, Sturgis, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Original No. 4,308,707, dated Jan. 5, 1982, Ser. No. 99,763, Dec. 3, 1979. Application for reissue Mar. 26, 1985, Ser. No. 716,065

Int. Cl.[4] B67B *3/20, 3/062;* B65B *7/28*

U.S. Cl. 53—314 **1 Claim**



1. In a capping machine for applying threaded caps to threaded bottle necks including bottle transfer means for moving the bottles successively in an upright position into the machine and means for depositing a cap in loose engagement on each bottle neck, the improvement comprising a cap hold-down plate mounted in overlying relation to the path of the bottles in said bottle transfer means and engagable with the top surface of each loosely positioned cap to exert a downward force thereon, means adjacent the said bottle path for relatively rotating the bottle and the respective cap in a direction to threadably engage the cap with the bottle while said hold-down plate is engaged with the cap, and spring pressed linkage means for concurrently exerting a downward force on said hold-down plate as the engaged cap moves downwardly on the respective bottle and maintaining said plate horizontal, said linkage means comprising:

(1) a stationary support plate overlying said bottle path;

(2) a pair of upstanding pivot brackets mounted on said support plate in transversely spaced relation to said bottle path;

(3) a generally horizontal first pivot pin supported by said pair of brackets;

(4) a second upstanding bracket on said support plate in longitudinally spaced relation to said pair of pivot brackets;

(5) a second horizontal pivot pin supported by said second bracket;

(6) said support plate having an elongated slot therein lying intermediate said pair of pivot brackets;

(7) an upstanding L-shaped element rigidly secured at its base to said hold-down plate and projecting upwardly through said elongated slot, the top portion of said element having a vertical slot traversed by said first pivot pin, whereby said hold-down plate is vertically shiftable relative to said support plate;

(8) a pair of first links respectively pivotally mounted at one end on said first pivot pin on each side of said mounting element;

(9) a pair of second links respectively pivotally secured at one end to the other ends of said first links and at their other ends to a third pivot pin traversing the base portion of the L-shaped mounting element;

(10) a fourth horizontal pivot pin traversing the medial portions of said [fourth] *first* links,

(11) a bifurcated spring seat mounted on said third pivot pin;

(12) a bifurcated spring seat mounted on said fourth pivot pin;

(13) a compression spring operating between said bifurcated spring seats to urge said cap hold-down plate downwardly relative to the support plate;

(14) and a generally triangular link having one vertex pivoted to said fourth pin, a second vertex pivoted to the top end of the mounting element and the third vertex pivoted to one end of a third link, the other end of said third link being pivoted to said second pivot pin, whereby said hold-down plate moves vertically with an engaged cap but maintains constant downward force on such cap and a horizontal position of the cap panel.

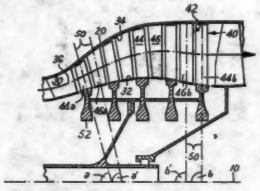
Re. 32,238
TURBINE ARRANGEMENT

Richard P. Johnston, Morrow, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Original No. 4,433,955, dated Feb. 28, 1984, Ser. No. 247,682, Mar. 26, 1981. Application for reissue Sep. 24, 1984, Ser. No. 653,407

Int. Cl.[4] F01D *1/04*

U.S. Cl. 415—199.5 **10 Claims**



1. In a gas turbine engine arranged substantially concentrically about a longitudinal axis thereof, a turbine arrangement for receiving and being rotated by hot gases exiting a combustor of said engine, said turbine arrangement comprising:

a. an annular gas flowpath disposed about said engine longitudinal axis and defined by radially inner and outer boundaries, said flowpath being arranged such that in a downstream direction through at least a forward portion of said flowpath, a mean flow streamline of said hot gases flowing therethrough slopes away from said engine longitudinal axis and said flowpath increases in annular height; and

b. a plurality of blade rows and vane rows spaced alternately and within said flowpath, each of said blade rows and each of said vane rows comprising a plurality of circumferentially spaced rotor blades and stator vanes, respectively, said rotor blades extending radially outwardly from a turbine rotor, the rotor blades and the stator vanes of said blade and vane rows within said forward portion of said flowpath having radial axes tilted forward at an angle less than 90° from said engine longitudinal axis so that said radial axes are substantially normal to said mean flow streamline;

said forward portion of said gas flowpath having a slope greater than that of a reference flowpath wherein radial axes of reference rotor blades are disposed substantially normal to said longitudinal axis, said forward portion of said gas flowpath being effective for increasing the slope of said gases flowing therethrough for permitting said rotor blades to be disposed at greater radial distances for more efficient transfer of energy from said gases to said turbine rotor relative to said reference flowpath.

Re. 32,239

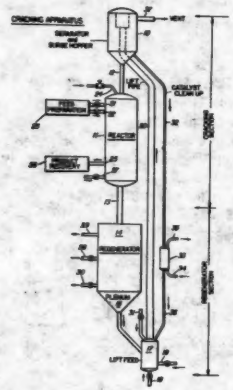
MOVING BED CATALYTIC CRACKING PROCESS WITH PLATINUM GROUP METAL OR RHENIUM SUPPORTED DIRECTLY ON THE CRACKING CATALYST

Albert B. Schwartz, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Original No. 4,473,658, dated Sep. 25, 1984, Ser. No. 524,103, Aug. 17, 1983. Continuation of Ser. No. 430,160, Sep. 30, 1982, abandoned, which is a continuation of Ser. No. 875,255, Feb. 6, 1978, abandoned, which is a continuation of Ser. No. 599,920, Jul. 28, 1975, abandoned, which is a continuation-in-part of Ser. No. 440,890, Feb. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 399,008, Sep. 20, 1973, abandoned. Application for reissue May 24, 1985, Ser. No. 737,641

Int. Cl.[4] B01J *29/38, 21/20, 38/22;* **C10G** *11/05*

U.S. Cl. 502—45 **5 Claims**



1. A method for increasing the reflexive heating of a catalyst in the regenerator section of a moving bed catalytic cracking apparatus with minimal or no detriment to cracking operation, said apparatus comprising a cracking section operating in the absence of added hydrogen, a regeneration section comprising two regeneration zones wherein *coke is burned to form flue gases that contain CO, said* cracking apparatus containing a circulating inventory of inorganic porous acidic solid cracking catalyst comprising a zeolite component consisting essentially of crystalline aluminosilicate zeolite having a pore diameter of 6 to 15 angstroms, which method comprises circulating with said inventory a minute amount of at least one metal of the group consisting of platinum, palladium, iridium, osmium, rhodium, ruthenium,, and rhenium, said metal being dispersed on said cracking catalyst and supported directly thereon by adding said metal to an existing catalyst, said amount being effective to convert to CO_2 at least about 25% of the CO formed in one of said regeneration zones and substantially ineffective for converting to CO_2 the CO formed in the other said regeneration zone and insufficient to produce more dry gas in said cracking section than is provided by 0.2 wt % chromia.

3. The method of claim **1** wherein said amount of metal is effective to convert to CO_2 substantially all of the CO formed in one of said regeneration zones.

5. The method described in claim **1** wherein said cracking catalyst contains a measurable amount less than 0.1 wt. % of chromia and said metal is platinum.

Re. 32,240

SELF-EMULSIFYING ANAEROBIC COMPOSITION

JoAnn DeMarco, Wethersfield, Conn., assignor to Loctite Corporation, Newington, Conn.

Original No. 4,069,378, dated Jan. 17, 1978, Ser. No. 697,165, Jun. 17, 1976. Application for reissue Feb. 8, 1980, Ser. No. 119,758

Int. Cl.[4] C08F *4/34*

U.S. Cl. 526—328 **14 Claims**

15. An anaerobic curing composition which is self-emulsifiable upon mixing with water comprising:

a. an anaerobically curing acrylate monomer;

b. a peroxy initiator in sufficient concentration to initiate cure of the monomer upon exclusion of oxygen, said peroxy initiator being selected from the group consisting of hydroperoxides and peresters which decompose to form free radicals;

c. about 0.25 to 10.0 percent by weight of the total composition of an anionic or nonionic surfactant which is dissolved in the composition and which renders the composition self-emulsifying upon mixing with water; and

d. an accelerator of anaerobic polymerization.

PATENTS

GRANTED SEP. 2, 1986

ERRATA

For CLASS	See PATENT NO.
053–504	4,608,797
124–024	4,608,959
239–036	4,609,245
544–250	4,609,494
540–349	4,609,495
558–270	4,609,501
558–320	4,609,502
423–598	4,609,694
514–202	4,609,730
552–140	4,619,942

PATENTS

GRANTED SEPTEMBER 2, 1986

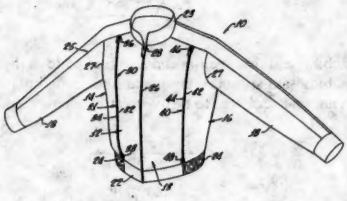
GENERAL AND MECHANICAL

4,608,715

PROTECTIVE GARMENT HAVING VARIABLE VENTILATION ENTRY AND EXIT PANELS

Richard D. Miller, La Habra, and John W. Wyckoff, Fullerton, both of Calif., assignors to Fitch-Wyckoff International, Inc., Fullerton, Calif.

Filed Aug. 12, 1985, Ser. No. 764,859
Int. Cl.[4] A41B *9/100*
U.S. Cl. 2—1 **15 Claims**



1. A ventilated garment having a front of the garment, a back of the garment, with the front having a front left torso region and a front right torso region, each extending generally to a respective side region, forming a border between the front and the back of the garment, comprising:

a first vertically extending ventilation inlet opening formed in the front left torso region, generally at the verticle center of the left torso region, having an upper end and a lower end;

a second vertically extending ventilation inlet opening formed in the front right torso region, generally at the verticle center of the right torso region, having an upper end and a lower end;

each of the first and second ventilation inlet openings being formed by a ventilation panel, comprising a perforated material extending the length of the opening, a closure means having a first closure member attached to one side of the ventilation inlet opening and a second closure member attached to the other side of the ventilation opening, with the ventilation panel attached to the first closure member and to the second closure member in a manner to define the size of the ventilation opening when the first and second closure members are separated from each other over the ventilation panel;

first and a second rear ventilation outlet openings each disposed on opposite sides of the verticle center of the back of the garment and extending vertically on the back of the garment, each of the first and second rear ventilation outlet openings being formed by a panel of perforated material extending the length of the opening, a first closure member attached to one side of the ventilation outlet opening and a second closure member attached to the other side of the ventilation outlet opening, with the ventilation panel attached to the first closure member and to the second closure member in a manner to define the size of the ventilation opening when the first and second closure members are separated from each other over the ventilation panel.

4,608,716

SAFETY JUMP SUIT UNIFORM AND LIFTING MECHANISM FOR MINERS AND OTHER WORKERS

Michael Brumfield, 375 C Rte. 2, Lewisburg, W. Va. 24901

Filed Aug. 20, 1982, Ser. No. 409,979
Int. Cl.[4] F41H *1/02;* **F41D** *13/00*
U.S. Cl. 2—2.5 **18 Claims**

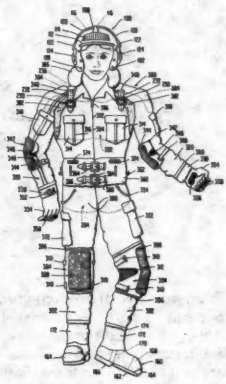
1. A body-fitting device for aiding the user during lifting or prolonged bending comprising:

(a) a pants or drawers section shaped for fitting around the lower torso, having a reinforced segment arounds its top rim and having a vertical opening which extends part of the way down the front portion thereof, thereby allowing easy removal or donning of the lower torso section, the vertical opening having closure means capable of providing temporary and secure closure;

(b) an upper section shaped for fitting around the chest region of the upper torso, and having a vertical opening which extends down the entire front portion thereof, the vertical opening having closure means capable of providing temporary and secure closure;

(c) two strap means, the bottom edge of each strap means being attached to the top rim of the back portion of lower torso section (a), the center portion of each strap means being adapted for attachment to the back portion of the upper torso section (b) in a slidable or movable manner, and the upper portion of each strap means looping over the top of upper torso section (b) from the back portion thereof, thereby forming a shoulder strap section; and

(d) adjustable attachment means for adjustably attaching the front part of the upper portion of each strap means to one of front portions of upper torso section (b); each of the two adjustable attachment means being mounted on one of the front portions of upper torso section (b).



7. A one-piece garment device containing safety and injury-prevention features comprising:

(a) a one-piece garment having full sleeves and legs, the one-piece garment having a vertical opening in the front portion thereof which extends from the next opening thereof to the crotch region thereof;

(b) closure means associated with vertical opening (a) capable of providing temporary and secure closure of vertical opening (a);

(c) a pants or drawers section forming a lower torso section, shaped for having a reinforced segment around its top rim and having a vertical opening which extends part of the way down the front portion thereof, thereby allowing easy removal or donning of the lower torso section, the lower torso section being positioned inside of garment (a), and closure means (b) also being capable of providing temporary and secure closure of vertical opening (c) so that the front of the lower torso section is temporarily and securely attached to the front portion of garment (a);

(d) an upper section shaped for fitting around the chest region of the upper torso, and having a vertical opening which extends down the entire front portion thereof, the

upper torso section being positioned inside of garment (a), and closure means (b) also being capable of providing temporary and secure closure of vertical opening (d) so that the front of the upper torso section is temporarily and securely attached to the front portion of garment (a);

(e) two strap means, the bottom edge of each strap means being attached to the top rim of the back portion of lower torso section (c), the center portion of each strap means being attached in a slidable or movable manner to the back portion of the upper torso section (d), and the upper portion of each strap means looping over the top of upper torso section (d) from back portion thereof to the front portion thereof, thereby forming a shoulder strap section; and

(f) adjustable attachment means for adjustably attaching front part of the upper portion of each strap means to one of front portions of upper torso section (d), each of the two adjustable attachment means being mounted on one of the front portions of upper torso section (d).

4,608,717

FLEXIBLE ARMOR

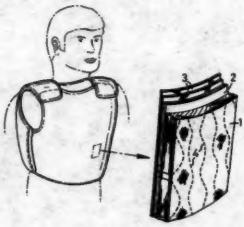
Ian E. Dunbavand, Bristol, England, assignor to Bristol Composite Materials Engineering Limited, Bristol, England

Filed Jul. 6, 1984, Ser. No. 628,298

Claims priority, application United Kingdom, Jul. 6, 1983, 8318315

Int. Cl.⁴ F41H *1/02*

U.S. Cl. 2—2.5 **6 Claims**



1. Flexible protective armour comprising:

(a) a front armour portion comprising one or more layers of a first woven aramid fibre,

(b) a back trauma attenuation portion comprising a layer of a material selected from foam, felt or feathers adjacent to one or more layers of a second woven aramid fibre, said front armour portion and said back trauma attenuation portion being placed together so as to sandwich said layer of material selected from foam, felt or feathers between said first and second woven aramid fibres, and

(c) means drawing said front armour portion and said back trauma attenuation portion tightly together to form an integral structure.

4,608,718

CALF, ANKLE AND FOOT PROTECTOR FOR BASEBALL BATTERS

James M. Reed, 2071 Westfall Rd., Rochester, N.Y. 14618

Filed Aug. 26, 1985, Ser. No. 769,517

Int. Cl.⁴ A41D *13/06*

U.S. Cl. 2—22 **9 Claims**

1. A calf, ankle and foot protector which comprises a flexible body of cushioning material with a first section for protecting the calf and ankle and a second section for protecting the foot and with a neck between said first and second sections providing a flexible hinge interconnection there between, said first and second sections and said neck all being connected in an integral assembly with each other, a first plate of rigid material having a curvature conforming to the calf being attached to said first section, a second plate of rigid material separate from said first plate having a curvature conforming to the foot being attached to said second section, said first and second plates being disposed on opposite sides of said neck, and means for

attaching said first section and said first plate to the calf and for attaching said second section and said second plate to the foot leaving said neck free to flex with movement of said foot, ankle and calf.

4,608,719

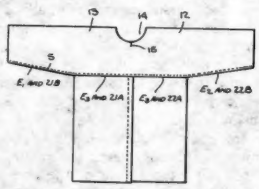
DISPOSABLE MEDICAL COVER GOWN

Audrey T. Lunt, 6371 Vermont Hill Rd., South Wales, N.Y. 14139

Filed Nov. 30, 1984, Ser. No. 676,927

Int. Cl.⁴ A41B *9/00*

U.S. Cl. 2—114 **5 Claims**



1. A slip over disposable protective gown usable in a medical environment and requiring no ties or other closures to secure the gown to the wearer, the gown being fabricated of a single blank of fabric sheeting of generally rectangular form having elongated triangular notches in opposing relation cut therein to divide the blank into upper and lower sections, the ends of the lower sections freed by the lower edges of the notches being folded in on vertical fold lines to define a pair of rear flaps, the upper section being provided with a central neck opening having a slit therein to admit the head of the wearer and being folded down along a horizontal fold line extending through the diameter of the opening to define a rear fold whose margin is seamed to the upper edges of the notches to create sleeves and being also seamed to the upper edges of the rear flaps to form a gown having an unbroken shoulder region that can be slipped over the head of the wearer through said neck opening.

4,608,720

BOWLING GLOVE

Charles J. Purin, Rockford, Ill., assignor to Rockford Sports Products, Inc., Rockford, Ill.

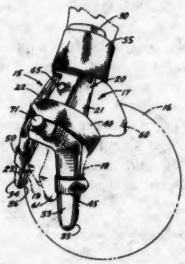
Filed Sep. 19, 1985, Ser. No. 777,935

Int. Cl.⁴ A63B *69/00*

U.S. Cl. 2—161 A **20 Claims**

1. A bowling glove for a person's hand and comprising a substantially rigid plate adapted to overlie the back of the hand opposite the palm thereof, laterally spaced and substantially rigid fingers projecting downwardly from said plate and adapted to overlie the back of the index finger and the back of

the little finger of the hand, the space between said rigid fingers being open to permit the other two fingers of the hand to be



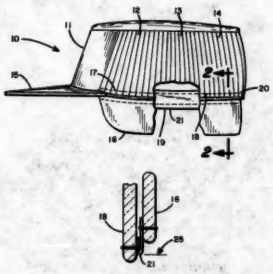
placed between said rigid fingers, and means for securing said glove tightly but releasably to the hand.

4,608,721

BASEBALL CAP WITH ELASTIC HINGE

William S. Lipkin, Minneapolis, Minn., assignor to M. U. Industries, Inc., Minneapolis, Minn.

Filed Dec. 3, 1984, Ser. No. 677,287
Int. Cl.[4] A42B 1/06
U.S. Cl. 2—172 **3 Claims**



1. In a multi-size cap structure adapted to accommodate wearers of various sizes of heads and including a multi-gore shell forming the crown portion, a visor portion secured to the forward edge of said shell and extending outwardly therefrom, an elongated band forming an ear flap portion hingedly secured to the base of said shell about the lateral and rear portions thereof, and adapted to be folded inwardly and upwardly in an upwardly folded first disposition, and downwardly about the ears of the wearer in an ear-enveloping disposition, and hinge means securing said elongated band to said crown portion along the length thereof, the improvement comprising:

(a) said multi-gore shell forming the crown portion being fabricated from a biaxially stretchable fabric and capable of being stretched along the longitudinal and lateral axes thereof;

(b) said elongated band forming said ear flap portion being stretchable along at least the longitudinal axis thereof and adapted to elongate upon stretching of the crown portion to accommodate the head of the wearer;

(c) said hinge means comprising a panel of fabric having a generally central longitudianl axis and first and second laterally disposed side portions on opposite sides thereof, said hinge panel fabric being stretchable at least along the longitudinal axis thereof and having said first and second lateral side portions secured to said crown portion and ear flap portion respectively at first and second stitch lines spaced at predetermined distances from the lateral edges of said crown portion and ear flap portion respectively;

(d) said crown portion and said ear flap portion being in substantial abutment along their lateral edges said lateral edges having a thickness less than the nominal thickness of the crown portion and flap portion, respectively, and defining a juncture line generally coincident with the axis of said hinge means; and

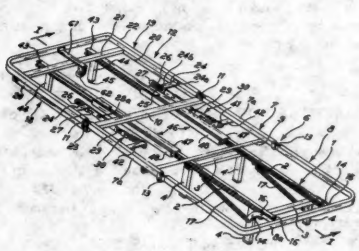
(e) the distance between said longitudinal axis of the hinge means and the uppermost plane of nominal thickness in said flap portion being greater than the width of said first laterally disposed side portion so that the ear flap portion, at all of its points of nominal flap portion thickness, overlaps no more than one layer of hinge means when said ear flap portion is in said inwardly folded disposition.

4,608,722

ARMCHAIR OR SOFA STRUCTURE TRANSFORMABLE INTO A BED

Renato Zorzetto, Vedano Al Lambro, Italy, assignor to STEMA S.a.s. di Zorzetto Renato and Co., Ronco Briantino, Italy

Filed Nov. 7, 1983, Ser. No. 549,705
Int. Cl.[4] A47C 17/20, 13/00
U.S. Cl. 5—18 R **3 Claims**



1. An armchair or sofa structure transformable into a bed of the type comprising, on a fixed base, a back portion including a front part and a rear part upperly hinged together, and a seat portion, the front part being connected to the seat portion, the seat portion being slidable relative to the base in the direction of a front of the structure, said sliding causing the two parts of the back portion to lie in one plane, wherein the seat portion includes a lower frame connected to the base by means which enable the lower frame to slide relative and parallel to the base, and an upper frame hinged to the lower frame and to the front part of the back portion, the upper frame of the seat portion being also connected to the front part of the back portion by a linkage comprising a rocker lever pivoted in its intermediate region to a frame of the structure, the rocker lever being connected at one end in a slidable manner to an arm fixed to the upper frame of the seat portion and at the other end to a telescopic snap-action positioner, the positioner being connected to the front part of the back portion, said positioner being extended when the upper frame is withdrawn from the lower frame, the extent of the extension being predetermined as a function of the extent of v ithdrawal of the upper frame from the lower frame, the positioner further including releasable means for retaining the positioner in the extended position.

4,608,723

APPARATUS FOR LASTING FOOTWEAR

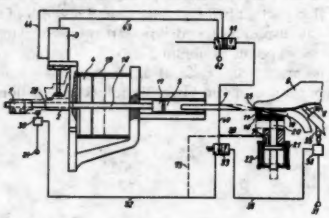
Gerhard Giebel, Bad Soden, Fed. Rep. of Germany, assignor to USM Corporation, Farmington, Conn.

Filed Mar. 2, 1984, Ser. No. 585,437

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1984, 3307388

Int. Cl.[4] A43D *21/00*

U.S. Cl. 12—10.1 7 Claims



1. A shoe lasting machine including a support for a shoe having a last with an upper assembled thereon and an insole secured thereto comprising

wiper assembly means,

means for displacing said wiper assembly means from a retracted position to an intermediate position,

means for advancing said wiper assembly means from said intermediate position to an advanced position,

injector plate means,

means for lowering said injector plate means from an operable position to a retracted position,

control delay means independent of said lowering means for activating said advancing means, and

means for conjointly actuating said lowering means and said control delay means.

4,608,724

MACHINE FOR THE DIRECT SOLING OF SHOE UPPERS

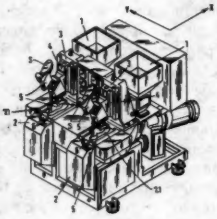
Ernst Stengelin, Neuhausen, Fed. Rep. of Germany, assignor to Kloeckner Ferromatik Desma GmbH, Fed. Rep. of Germany

Filed Oct. 22, 1984, Ser. No. 663,368

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1983, 3343312

Int. Cl.[4] A43D *25/20*; B29F *1/10*

U.S. Cl. 12—17 R 7 Claims



1. A machine for the direct soling of a shoe upper, the machine having a housing and at least one molding station comprising a shoe last holder and at least one shoe last mounted on said holder, a die mold forming a mold cavity together with said shoe last and having an inlet passage at the heel end of said shoe last, an injection molding unit for injecting mold material into said mold cavity through said inlet passage for the direct soling of the shoe upper, said injection mold unit comprising a pivotable injection nozzle having a mold material passage, said nozzle being pivotable into and away from an injection position in an arcuate path, said passage being opened in an injection position and closed in a position away from said injection position by the provision of a shutoff valve, the improvement wherein said injection mold unit is located below said die mold, and said unit further comprising arm brackets fixedly mounted on said housing, axle stubs supported on said brackets, a lever having a pair of spaced lever arms pivotally mounted on said stubs, said injection nozzle pivotally mounted on said stubs for movement into and away from said injection position upon pivotal movement of said lever arms, a coupling extending between and pivotally connected to said lever arms, and means engaging said coupling for effecting the pivotal movement of said lever arms.

4,608,725

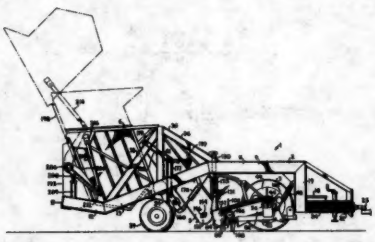
LITTER RETRIEVING MACHINE

Samuel G. Jackson, Lubbock, Tex., assignor to Proficient Systems, Inc., Dallas, Tex.

Filed Feb. 21, 1985, Ser. No. 704,078

Int. Cl.[4] E01H *15/00*

U.S. Cl. 15—3 4 Claims



1. A litter retrieving machine comprising:

(a) a framework for movement over a ground surface;

(b) a ground engageable rotating drum mounted in said framework and having a plurality of fingers mounted to said drum for engagement and retrieval of litter;

(c) stripper means for removing said litter from between said fingers;

(d) conveyor means for transporting said litter from said stripper means;

(e) a hopper mounted in said framework and communicating with said conveyor means;

(f) a mechanism for lifting and dumping said hopper extending between said hopper and said framework and including a jointed arm arrangement having an upper arm member with one end pivotally mounted to said hopper and a lower arm member with one end pivotally mounted to said framework; said upper and lower arm members being connected at an elbow joint;

(g) pivot means extending between said framework and said hopper; and

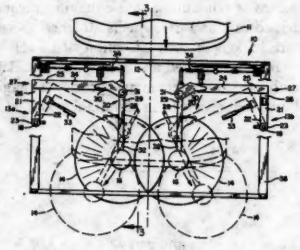
(h) said mechanism including motive means extending between said framework and said lower arm member and connected to said lower arm member at a pivot point positioned between said one end and said elbow joint; said motive means being operable to using said lower arm member upwardly to cause said upper and lower arm members to extend about said elbow joint, urge said hopper upwardly, and swing said hopper about said pivot means to dump the materials therein.

4,608,726

WRAPAROUND BRUSH

Daniel C. Hanna, 1133 SW. Rivington Dr., Portland, Oreg. 97201

Filed Jan. 9, 1985, Ser. No. 689,865
Int. Cl.[4] B60S 3/06
U.S. Cl. 15—53 AB 8 Claims



1. An apparatus for washing vehicles advancing in a forward direction along a path comprising:

a brush;

means for rotating the brush;

support means positioned to one side of the path;

brush supporting arm means mounted to the support means and positioned above the path so as to allow vehicles to pass beneath the arm means, the arm means having an L-shaped primary arm with first and second leg sections each with respective first and second end portions, the second end portion of the first leg section being connected to the first end portion of the second leg section to form the primary arm, the primary arm defining a corner region between and near the connection of the first and second leg sections;

the first end portion of the first leg section being pivoted to the support means, the arm means also including a secondary arm having first and second end portions, the first end portion of the secondary arm being pivoted to the second end portion of the second leg section of the primary arm, and the brush being rotatably connected to the second end portion of the secondary arm;

the arm means being positionable in a first postion in which the first leg section extends in a rearward direction from the support means and along the side of the path, the second leg section extends at least partially across the path, and in which the secondary arm supports the brush for engagement with the front of a vehicle advancing in the forward direction along the path, whereby, in cooperation with the reaction of the car on the rotating brush, the brush is movable from engagement with the front of an advancing vehicle when the arm means is in the first position, across the front end of the vehicle to the side of the vehicle adjacent the support means, along the side of the vehicle into engagement with the rear of the vehicle and across the rear of the vehicle, whereby the brush extends to a rearward position that is disposed rearwardly virtually as far as the rearmost portion of the brush supporting arm means, thereby maximizing the brush's length of travel with the vehicle; and

positioning means for urging the arm means toward the first position.

4,608,727

BURNISHING FLOOR POLISHER

Henry J. Schwab, W238 N6778 Laurie La., Sussex, Wis. 53089

Filed Dec. 10, 1984, Ser. No. 679,806
Int. Cl.[4] A47L 11/162
U.S. Cl. 15—98 14 Claims

1. A floor polisher comprising:

a frame;

engine means mounted on said frame;

rotary brush means mounted to a rotary shaft driven by said engine means;

axle means mounted to said frame;

left and right wheels mounted to said axle means for supporting and rolling said frame forward-rearward on the floor; and

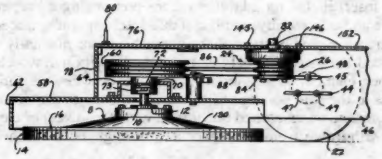
means for adjustably moving said axle means forward-rearward relative to said frame for balancing said frame forward-rearward about said left and right wheels as a fulcrum;

wherein:

said frame has a rear section having operator handle means for pushing said frame;

said frame has a central section mounting said engine and said axle means; and

said frame has a front section housing said rotary brush means;



said central frame section has generally vertical left and right sidewalls;

said axle means comprises left and right axles mounted by respective left and right axle plates to respective said left and right sidewalls of said central frame section, said left and right wheels mounted on respective said left and right axles;

one of said left axle plate and said left sidewall of said central frame section including longitudinal forward-rearward slots formed therethrough for mounting the other of said left axle plate and left sidewall of said central frame section and for adjusting the relative forward-rearward location thereof;

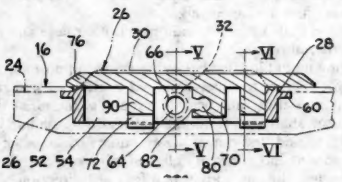
one of said right axle plate and said right sidewall of said central frame section including longitudinal forward-rearward slots formed therethrough for mounting the other of said right axle plate and right sidewall of said central frame section and for adjusting the relative forward-rearward location thereof.

4,608,728

WIPER BLADE COMPONENTS

Edmund J. Sumins, Cheddington, and Roger W. Baker, Hanworth, both of England, assignors to Trico Products Corporation, Buffalo, N.Y.

Filed Jan. 25, 1985, Ser. No. 694,720
Int. Cl.[4] B60S 1/40
U.S. Cl. 15—250.32 6 Claims



1. A wiper blade connector assembly for operatively connecting a windshield wiper blade along side a wiper arm having a laterally extending pin at its free end, the wiper blade

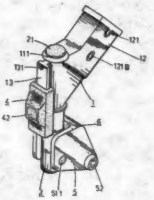
comprising a superstructure including a metal yoke having a central section of generally inverted U-shape cross section defined by a web and opposite depending flanges, an elongate aperture in the web defined laterally by said depending flanges, a pair of transversely aligned openings in each one through each flange of the yoke; said pin having a circumferential groove forming opposed shoulders, said connector assembly comprising an insert of molded plastic of generally rectangular form having a length substantially greater than its width adapted to fit within said aperture, a lip at each end projecting longitudinally of the insert for forming lap joints with said web and having opposite side portions for lying within said aperture closely adjacent said opposite depending flanges, tranversely aligned cylindrical projections on the outer surface of each of said side portions adjacent said flanges, said projections being receivable within said openings, tranversely aligned holes extending through said side portions and said projections forming bearing surfaces for journaling said pin whereby said pin is maintained out of contact with the metal portion of said yoke, said insert including a latch member comprising a keeper element and a manually manipulatable latch operator accessible from an exposed portion of the wiper blade for manually moving said latch member between a latched position in which said keeper element protrudes into a space between the aligned holes in the side portions of the insert to engage the groove in the pin, and an unlatched position in which said keeper element lies withdrawn from said space and disengaged from the pin.

4,608,729

LOCKABLE STEERING STRUCTURE HAVING A VERTICALLY SLIDABLE LOCKING BLOCK

Yung H. Huang, 140-58, Ch'e-lu-Chien, Pao An Ts'un, Jen Te Hsiang, Tainan Hsien, Taiwan

Filed Oct. 29, 1984, Ser. No. 665,977
Int. Cl.[4] B60B *33/02*; E05D *11/10*
U.S. Cl. 16—35 R **11 Claims**



1. A lockable wheel structure for use on a wheeled baby cart to support the baby cart on the wheels comprising

a frame support having an extending portion for attachment to the baby cart and a substantially vertical portion attached to said extending portion, said substantially vertical portion having a penetration hole therethrough and a first T shaped rail along an outer surface of said vertical portion associated in direction with said penetration hole, and an engaging means adjacent to an upper terminal end of said first T shaped rail;

a rotation shaft fitted into said penetration hole and extending therethrough;

a bearing mount located below the frame support and having a hole therein to receive an end portion of said rotation shaft and thus said bearing mount is mounted on said rotation shaft, and a second T shaped rail, similarly structured to said first rail, along an outer surface of said bearing mount and vertically aligned with said first T shaped rail when the cart moves in a forward direction;

a wheel support locked to said bearing mount for movement therewith and attached to the wheels of the baby cart;

a block having a groove complementary to said T shaped rails for vertical sliding movement of said block along said T shaped rails and having a complementary engaging means to enable engagement of said complementary engaging means with said engaging means of said first T shaped rail

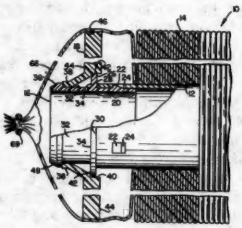
whereby said wheel support having said wheels attached thereto rotates freely relative to said bearing mount when said block is positioned with said complementary groove only engaging said first rail and said complementary engaging means is contacting said engaging means of said first T shaped rail, and the wheels attached to said wheel support are locked in their direction of travel when the rails are vertically aligned and said block is slidably positioned with said complementary groove engaging both said first and said second rail simultaneously.

4,608,730

DISPOSABLE TENSION SLEEVE FOR A STUFFING MACHINE

Vytautas Kupcikevicius, and Vytas A. Raudys, both of Chicago, Ill., assignors to Viskase Corporation, Chicago, Ill.

Filed Jul. 5, 1985, Ser. No. 751,891
Int. Cl.[4] A22C *11/00*
U.S. Cl. 17—41 **19 Claims**



1. A tension sleeve for a stuffing machine of the type having a reciprocally operable slacker mechanism comprising:

a. an elongated tubular member having fore and aft ends and an inside bore diameter sufficient for slidably positioning said tubular member over a stuffing horn of the stuffing machine;

b. attachment means at said aft end and co-actable with a part on said stuffing machine for releasably attaching said tubular member to the reciprocally operable slacker mechanism of said stuffing machine;

c. a tubular nosepiece at said fore end having a rearward portion disposed in nesting relationship with said tubular member and cooperating lock means on said rearward portion and tubular member for locking said nosepiece to said tubular member in said nesting relationship;

d. stop means on said nosepiece forward of said rearward portion and abutting said fore end to establish a limit to said nesting relationship;

e. connector means on said nosepiece forward of said stop means;

f. a sizing means fixed on said nosepiece including connector elements at an inner periphery thereof in fixed connective mating engagement with said connector means and having a wall extending radially from said connector elements to an outer periphery which defines a casing contacting portion; and

g. said stop means further providing positioning means co-acting with said sizing means for longitudinally locating said sizing means with respect to said nosepiece.

4,608,731

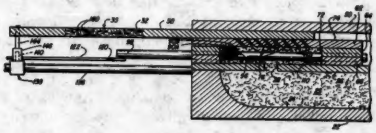
FOOD PATTY WITH IMPROVED VOID STRUCTURE, SHAPE, AND STRENGTH AND METHOD AND APPARATUS FOR FORMING SAID PATTY

James A. Holly, Boca Raton, Fla., assignor to Holly Systems, Inc., Boca Raton, Fla.

Continuation-in-part of Ser. No. 456,481, Jan. 11, 1983, abandoned. This application Feb. 21, 1984, Ser. No. 581,771

Int. Cl.[4] A22C *7/00*

U.S. Cl. 17—45 26 Claims



18. A method for forming a patty of plastic food material containing tissue fibers, said method comprising the steps of:

(a) providing a foraminous member having an upstream side and a downstream side with apertures therein communicating between said upstream and downstream sides;

(b) providing mold parts including a mold plate that defines a mold opening and at least a portion of a mold cavity having the shape of at least a portion of the exterior surface of said patty, moving said mold plate from a patty discharge position to a patty molding position adjacent said downstream side of said foraminous member, and then moving said mold plate back to said patty discharge position;

(c) at least when said mold plate is in said patty molding position, forcing said food material under pressure directly against said upstream side of said foraminous member to effect movement of some of said food material from the upstream side of said foraminous member through said apertures to the downstream side of said foraminous member, through said mold opening, and into said mold cavity as extrudate masses which togeter define a packed array forming said patty;

(d) biasing an agitator and said foraminous member together with said agitator contacting said upstream side of said foraminous member; and

(e) effecting relative movement between said agitator and said foraminous member in a direction generally parallel to the upstream side of said foraminous member at least during part of the movement of said mold plate to said patty molding position in step (b) so as to dislodge a tissue fiber that may have lodged on the upstream side of said foraminous member with opposite end portions extending in different apertures.

4,608,732

GIZZARD HARVESTING PROCESS

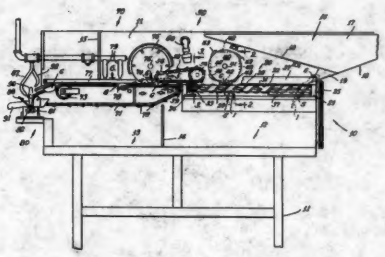
William J. Hill, Rte. 3, Box 230, Ball Ground; Carl J. Hill, deceased, late of Ball Ground, and by Hazel R. Hill, executrix, Rte. 3, Box 229, Ball Ground, all of Ga. 30107

Division of Ser. No. 374,771, May 4, 1982, Pat. No. 4,524,491. This application Jun. 3, 1985, Ser. No. 721,540

Int. Cl.[4] A22C *21/00*

U.S. Cl. 17—50 5 Claims

1. In the processing of split and open gizzards from which the stomachs have been removed and which have interior linings and a nib portion remaining where the stomach had been attached, the improvement comprising the steps of directing the gizzards into a processing apparatus in an orientation which initially presents and exposes said nib portion, trimming



said nib portion from said gizzards while said gizzards are so oriented; and peeling the interior linings from said gizzards.

4,608,733

SYSTEM FOR FASTENING POCKET CLIPS TO METAL CAPS OR BARRELS OF WRITING INSTRUMENTS

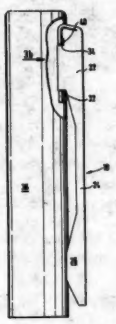
Dieter Eylers, Idar-Oberstein, Fed. Rep. of Germany, assignor to Gottlieb Roll GmbH & Co., Idar-Oberstein, Fed. Rep. of Germany

Filed Jun. 12, 1984, Ser. No. 619,900

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1983, 3326678

Int. Cl.[4] B43K *25/00*

U.S. Cl. 24—11 F 7 Claims



1. A writing instrument pocket clip assembly, comprising: a capsular, metal part having a substantially rectangular opening confined in part by a lower edge and by two opposite lateral edges, said lateral edges respectively having relatively short projections extending towards each other; and a pocket clip of spring-elastic metal, said clip having a web extending substantially parallel to said capsular part, said web having an upper portion, two substantially planar first tabs respectively extending from opposite sides of said upper portion substantially at right angles to said web and towards said capsular part, said web having a tongue extending from said upper portion of said web, said tongue having a first portion connected to and extending transverse to said upper portion of said web towards said capsular part, said tongue also having a second portion connected to and extending substantially at right angles to said first portion, substantially parallel to said web, and between said first tabs; said rectangular opening of said capsular part snugly accommodating said first tabs, said projections matingly engaging associated notches in said first tabs and being located between said second portion of said tongue and said first tabs, said tongue having a free end extending below said

first tabs and below said lower edge of said opening and resiliently resting on the inside of said capsular part, whereby said clip is fastened on said capsular part.

4,608,734

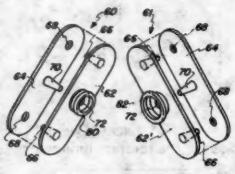
SNAP CONNECTOR, LEVER

Barry Schiller, 720 N. Flagler Dr., Ft. Lauderdale, Fla. 33304

Filed Dec. 10, 1984, Ser. No. 680,091

Int. Cl.[4] A44B *1/18, 1/28*

U.S. Cl. 24—104 **3 Claims**



1. A quick attaching threadless fastener with a quick release means for connecting two pieces of material, comprising:

a first mating threadless fastener assembly including two base members, one of which is placed on each side of the first piece of material;

said two base members include a first base, and a second base connected to a first threadless fastener;

said first threadless fastener assembly including a first intermediate member fixed to one of said two base members, said first intermediate member having a distant end connectable to the other one of said two base members after said first intermediate member passes through said first piece of material;

a second mating threadless fastener assembly including two base elements one of which is placed on each side of the second piece of material;

said two base elements include a third base and a fourth base connectable to a second threadless fastener matably connectable to said first threadless fastener;

said second threadless fastener assembly including a second intermediate member fixed to one of said two base elements, said second intermediate member having a distant end connectable to the other one of said two base elements after said second intermediate member passes through said second piece of material, and

a first quick release element means connected to said second mating threadless fastener assembly, said first quick release element means for cantilevering said second mating threadless fastener assembly away from said first mating threadless fastener assembly for unmating said second threadless fastener from said first threadless fastener.

4,608,735

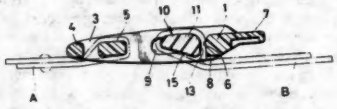
SLIDING BAR BUCKLE

Kazumi Kasai, Namerikawa, Japan, assignor to Nippon Notion Kogyo Co., Ltd., Tokyo, Japan

Filed Aug. 15, 1985, Ser. No. 765,963

Int. Cl.[4] A44B *11/10*

U.S. Cl. 24—196 **3 Claims**



1. A sliding bar buckle comprising:

(a) a molded connector frame of synthetic resin including

(1) a grip base having a strap bearing surface,

(2) a pair of spaced legs extending integrally from opposite ends of said grip base and having a pair of transversely aligned oblong slots, respectively, spaced from said grip base by a distance, and

(3) a connecting bar extending integrally between said legs remotely from said grip base; and

(b) a strap retainer of molded synthetic resin including

(1) a central strap engagement portion having a strap pressing surface for frictionally pressing a strap end portion against said strap bearing surface, and a sloped surface on its back inclined downwardly toward said strap bearing surface, said sloped surface having an upper end disposed adjacent to said connecting portion and a lower end disposed adjacent to said grip base, said upper end lying in a plane extending through a center of the thickness of said central strap engagement portion, and

(2) a pair of arms extending integrally from opposite ends of said central strap engagement portion and loosely non-rotatably fitted in said oblong slots, respectively, said arms being disposed out of coaxial alignment with said central strap engagement portion toward said connecting bar, said arms being transversely spaced from said strap pressing surface by said distance.

4,608,736

APPARATUS FOR MANUFACTURING A BULKY TEXTURED YARN

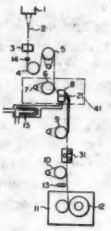
Koji Tajiri, Mihara, and Toshiharu Arimatu, Ibaraki, both of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of Ser. No. 245,121, Mar. 18, 1981, Pat. No. 4,404,718, which is a division of Ser. No. 15,904, Feb. 28, 1979, abandoned. This application May 12, 1983, Ser. No. 493,980

Claims priority, application Japan, Mar. 7, 1978, 53-24933

Int. Cl.[4] D02G *1/16*

U.S. Cl. 28—220 **5 Claims**



5. In an apparatus for manufacturing a bulky textured yarn from a thermoplastic synthetic multifilament yarn, said apparatus comprising:

means for texturing said multifilament yarn including means for preheating said multifilament yarn, means for treating said preheated yarn with pressurized heated fluid, means for controlling the temperature of said fluid; and

means for drafting said textured yarn at a constant rate of draft in a drafting zone downstream of said texturing means;

the improvement comprising:

tension detector means for detecting a yarn tension in said drafting zone;

temperature detector means for detecting the temperature of the fluid;

switch means for switching said tension detector means in a feedback path to said means for controlling when said detected tension is at least equal to a preset tension and for switching said temperature detector means in a feedback

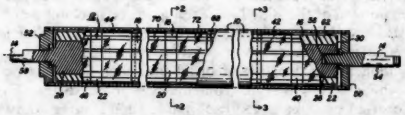
path to said means for controlling when said detected tension is less than said preset tension.

4,608,737

MAGNET DEVELOPER ROLLS

Dale B. Parks, W. Henrietta, and Ronald T. Kosmider, Rochester, both of N.Y., assignors to Magnetic Technologies Corp., Rochester, N.Y.

Filed Aug. 20, 1984, Ser. No. 642,015
Int. Cl.[4] B21B *13/02, 27/02*
U.S. Cl. 29—110 **18 Claims**



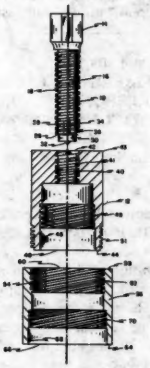
1. A magnet development roll which comprises a magnet structure, a cylindrical shell of conductive material around said magnet structure, said shell having an axis, said magnet structure having a plurality of hubs and a plurality of ribs, at least one of said ribs containing permanent magnet material, said ribs being connected to the periphery of said hubs and defining a unitary assembly with said hubs spaced apart and not otherwise connected except by said ribs, said ribs being sufficiently rigid to support said hubs in spaced apart relationship without the presence of a core, the space in said structure between said hubs being completely open except for said ribs, and means supporting said structure on shell for rotation with respect to each other about said access.

4,608,738

METHOD AND APPARATUS FOR REMOVING SPINDLES AND NEEDLE BEARINGS

Thomas H. Wood, 1700 West 2700 North #69, Ogden, Utah 84601

Filed Mar. 2, 1984, Ser. No. 585,545
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—264 **15 Claims**



1. A device for removing the threaded hollow wheel spindle and extracting the needle bearings from the wheel-axle assembly of a four-wheel drive vehicle, said device comprising:

a mounting means adapted to form a manually releasable union with said threaded wheel spindle, said mounting means possessing an axial threaded retaining means;

an axial threaded driving means maintained within said retaining means being adapted to be threadedly inserted into said retaining means producing thereby a force applied against said wheel axle whereby said wheel spindle is forcibly removed from said wheel-axle assembly as a result of said force application; and

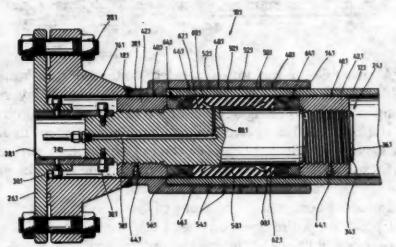
a pushing means having a planar, substantially circular abutment surface adapted to be inserted within said wheel spindle after said removal of said spindle from said wheel-axle assembly, said pushing means being positionable in three conditions, a first condition wherein a diameter of said pushing means is larger than a diameter of a centrally located aperture within said needle bearings, a second condition wherein said pushing means is collapsed in diameter such that said pushing means diameter is smaller than said central aperture diameter of said needle bearings whereby said pushing means may pass through said needle bearing aperture, and a third condition wherein said pushing means diameter is larger than said needle bearing aperture, yet smaller than an inner diameter of that portion of said wheel spindle proximate said needle bearing, said pushing means diameter being expanded upon said passage of said pushing means through said needle bearing aperture whereby said circular, planar, abutment surface of said pushing means is abutted against said needle bearings, said pushing means being made intercooperable with said driving means whereby said driving means effects a displacement of said pushing means and operates to push said pushing means out of said wheel spindle, thereby ejecting said needle bearings from within said spindle.

4,608,739

CONNECTOR OF AND SEALING OF TUBULAR MEMBERS

Jack E. Miller, Houston, Tex., assignor to Big-Inch Marine Systems, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 482,525, Apr. 6, 1983, abandoned. This application Mar. 21, 1984, Ser. No. 590,628
Int. Cl.[4] B23P *17/00*; B21D *39/08*
U.S. Cl. 29—421 R **27 Claims**



1. Apparatus for use in forming a connection between an inner tubular member and an outer tubular member when they are axially overlapped to form an axially extending connection zone, the apparatus comprising a connection tool positionable proximate to the connection zone, the connection tool comprising:

(a) a mandrel;

(b) axially spaced confining means to define an axially confined zone of the mandrel for registering with the connection zone;

(c) a force transmitting sleeve of a solid deformable material positioned in the confined zone on the mandrel and having an internal recess for receiving a fluid under pressure;

(d) anti-extrusion means which is axially proximate the sleeve and displaceable in a radial direction during use into abutment with the adjacent tubular member to limit extrusion of the transmitting sleeve material in an axial direction during use,

the anti-extrusion means comprising an anti-extrusion member provided at each axial end of the sleeve, each

anti-extrusion member comprising a helical member which is axially located relatively to the mandrel, and displacement means which is associated with the helical member to transmit pressure from the sleeve to the helical member to cause radial outward displacement of the helical member into abutment with the inner surface of the inner tubular member to close the annular gap and thus restrict axial extrusion of the sleeve; and

(e) means for directing a force in the form of a fluid under pressure gradually to the internal recess during use to cause deformation of the sleeve, said anti-extrusion means cooperating to bias the sleeve deformation in a radial direction for engaging with and then causing deformation of the walls of one adjacent tubular member in a radial direction for engaging with the walls of the other tubular member in the connection zone to form a connection between the first and second tubular member,

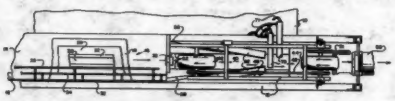
the connection tool being adapted to be positioned within the inner tubular member when the tubular members are overlapped, and the force transmitting sleeve being adapted to be deformed in a radial outward direction to engage with the inner surface of the walls of the inner tubular member and then deform these walls radially outwardly into engagement with the walls of the outer tubular member.

4,608,740

RAIL UPHOLSTERER

David W. Bloys, and Dale W. Boyce, both of 221 26th St., Bldg. 4C, Lubbock, Tex. 79404

Filed Jun. 4, 1984, Ser. No. 616,620
Int. Cl.[4] B68G *7/04*
U.S. Cl. 29—429 **2 Claims**



1. A process for making a padded waterbed rail from a foldable pliable sheet of upholstery, a foldable pliable layer of padding, and a rigid elongated waterbed rail that has a longitudinal rail center surface, two rail side surfaces adjacent to and coextensive with the rail center surface, two rail tack surfaces adjacent to and coextensive with the two rail side surfaces, and a channel separating the rail tack surfaces;

said process comprising the steps of:

first positioning the layer on the sheet; then

second positioning the rail on the layer, then

continuously moving the sheet, layer and rail longitudinally downstream with respect to a feed path while performing the following steps;

first pressing successive areas of the sheet toward the rail center surface by use of a slide face that extends along the feed path, as the rail, layer and sheet progressively move onto the slide face;

first compressing areas of the layer between the pressed sheet and the rail center surface in response to the first pressing step;

first folding the sheet and layer against the rail side surfaces in response to progressive movement of the rail, layer, and sheet along the feed path, to produce a folded sheet and a folded layer; then

first pulling the sheet and layer, over fence edges of two opposed fence faces that extend along a portion of the slide face, each fence edge being inclined as viewed in a downstream direction, such that each fence edge is proximate the slide face at one point along the feed path and distal the slide face at a point which is downstream from the one point, so that force exerted on the sheet at each fence edge is directed away from the slide face and in an upstream direction; then

second pressing the folded sheet by use of the fence faces toward the rail side surfaces, as the rail, layer, and sheet move downstream past the inclined fence edges to between the fence faces; while

second compressing the layer during the second pressing step above;

second folding edges of the sheet against the rail tack surfaces in response to progressive movement of the rail, layer; and sheet along the feed path; then

second pulling the sheet over guide edges of two spaced apart guide faces that extend along and are spaced above a portion of the slide face, each guide edge being inclined as viewed in a downstream direction, such that each guide edge is proximate its respective fence face at one point along the feed path and distal the fence face at a point which is downstream from the one point, so that force exerted on the sheet at each guide edge is directed away from the fence face and in an upstream direction; then

fastening the sheet that is folded against the rail tack surfaces during the second folding step to the rail tack surface as the rail, layer, and sheet progressively move past a fastening position along the feed path; and

continuing the pressing of the sheet toward the rail center surface that was initiated with the first pressing step during and between performance of the first compressing, first folding, first pulling, second pressing, second compressing, second folding, second pulling, and fastening steps;

continuing the compressing of the layer between the sheet and the rail center surface that was initiated with the first compressing step during and between performance of the first folding, first pulling, second pressing, second compressing, second folding, second pulling, and fastening steps;

continuing the pressing of the sheet toward the rail side surfaces that was initiated with the second pressing step during and between performance of the second compressing, second folding, second pulling and fastening steps; and

continuing the compressing of the layer between the sheet and the rail side surfaces that was initiated with the second compressing step during and between performance of the second folding, second pulling, and fastening steps.

4,608,741

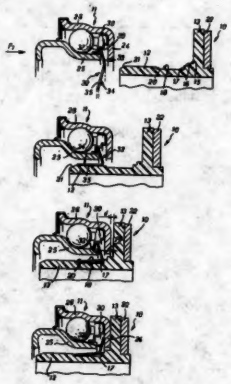
METHOD OF ASSEMBLING A CLUTCH RELEASE BEARING AND CORRESPONDING CLUTCH RELEASE BEARING, IN PARTICULAR FOR AUTOMOTIVE VEHICLES

Bernard Mallet, Wittelsheim, France, assignor to VALEO, Paris, France

Filed Apr. 13, 1984, Ser. No. 599,984
Claims priority, application France, Apr. 15, 1983, 83 06198
Int. Cl.[4] B23P *11/02*; F16C *23/08*
U.S. Cl. 29—450 **4 Claims**

1. Method of assembling a clutch release bearing which incorporates a maneuvering member comprising a transverse flange and an abutment shoulder spaced from the flange, and a drive member comprising at least one generally annular axial member, a transverse radial rim adapted to bear on the flange of the maneuvering member and between the radial rim and the annular member, an axially acting annular spring which is adapted to urge the radial rim of the drive member towards the flange of the maneuvering member, bearing to this end on the maneuvering member, and which has two stable configurations in one of which the annular spring is generally concave (relative to a given axial observation direction) and in the other of with the annular spring is generally convex (relative to the same axial observation direction), said method comprising the steps of inserting the drive member in the axial direction onto the maneuvering member, from the same side as the abutment

shoulder and with the annular spring is a first of its configurations and, after the annular spring comes into abutting relationship with the abutment shoulder of the abutment shoulder of



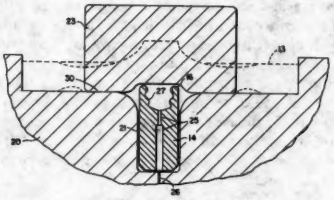
the maneuvering member continuing axial movement of the drive member until the annular member of the drive member causes the annular spring to flip over, changing from the first configuration to the second configuration.

4,608,742

FORGED DISSIMILAR METAL ASSEMBLY AND METHOD

John H. Ferguson, Sauquoit, and Dana P. Perkins, New Hartford, both of N.Y., assignors to Parker Hannifin Corporation, Irvine, Calif.

Filed May 26, 1983, Ser. No. 498,347
Int. Cl.⁴ B23P *25/00*
U.S. Cl. 29—458 **15 Claims**



1. Method of producing a component having a rigid joint between two dissimilar metals in a forging operation, comprising the steps of:

(a) providing a first metal part in a pre-determined shape;

(b) determining an interface between the first part and a second metal part;

(c) machining the first part into a final form at the interface;

(d) coating the first metal part at the interface with a non-ceramic coating material having a property of inhibiting oxidation during the forging operation;

(e) providing a billet of the metal from which the second part is to be formed;

(f) coating the billet, at a surface of the billet corresponding to the interface, with a non-ceramic die lubricant;

(g) heating the non-ceramic die lubricant in a non-oxidizing atmosphere at a temperature in excess of 600° C. by heating the coated billet in a non-oxidizing atmosphere at a temperature in excess of 600° C.;

(h) coating remaining surfaces of the billet with a die lubricant;

(i) establishing the first part at a temperature below that required for plastic deformation during the forging operation;

(j) heating the billet to a forging temperature;

(k) placing the first part into a pre-determined position in a forging die;

(l) placing the billet into a second pre-determined position in the forging die;

(m) applying forging pressure against the billet so that the billet is formed into a desired shape of a forging of the second part and is joined to the first part at the interface; and

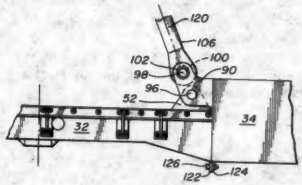
(n) machining the joined parts to prdouce said component.

4,608,743

MINING SHOVEL BALLAST BOX CONNECTION METHOD AND APPARATUS

Paul C. Stewart, Mt. Gilead, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jun. 24, 1985, Ser. No. 747,836
Int. Cl.⁴ B23P *19/00;* **B66C** *23/76, 23/00*
U.S. Cl. 29—526 R **10 Claims**



1. An improved method of attaching a ballast box to a mining shovel rotating frame, said frame having an inverted V-shaped gantry for supporting the shovel boom, said gantry having forward and rear legs attached to respective eye projections on said rotating frame, the improvement comprising the steps of:

a. disconnecting said rear legs of said gantry from said respective rotating frame eye projections,

b. forming means on said ballast box for removable attachment of said ballast box to said respective rotating frame eye projections normally used for said gantry rear legs, and

c. removably attaching said gantry rear legs only to said ballast box attachment means.

4,608,744

FRAME MOLDING PROCESS OF A SEAT FOR VEHICLES

Akira Nemoto, Akishima, Japan, assignor to Tachikawa Spring Co., Ltd., Akishimashi, Japan

Filed Sep. 4, 1984, Ser. No. 647,029
Int. Cl.⁴ B21D *5/00;* **B29C** *49/20*
U.S. Cl. 29—527.1 **1 Claim**

1. A frame molding process of a seat for vehicles comprising the steps of:

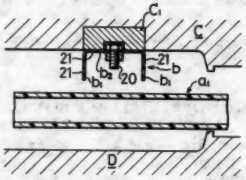
(a) providing a molding die adapted for blow-molding a synthetic resin into a hollow plate-shaped frame;

(b) bending at least one porous metallic plate so as to form a reinforcement plate of a U-shaped configuration and section which has a pair of leg portions and each leg portion being of a length substantially equal to the thickness of said hollow plate-shaped frame;

(c) removably mounting the top plane surface of said reinforcement plate onto the inner surface of said molding die such that said pair of legs of said reinforcement plate are positioned in a direction crossing the interior of said molding die; and

(d) blowing a parison of said synthetic resin through said molding die in such a manner that upper and lower streaming walls of said parison are caused to run spaced apart from each other at a distance substantially corresponding to the length of said pair of legs of said reinforcement plate,

whereby, in the course of blowing said parison, said upper and lower streaming walls of said parison are caused to



cover the entire surfaces of said pair of leg portions and the inner surface of said reinforcement plate and to flow into the porosity of said reinforcement plate while at the same time said lower streaming wall of said parison is caused to run across the lower ends of said pair of leg portions, to thereby create a portion enclosed by said parison at the points corresponding to the position of said reinforcement plate.

4,608,745

METHOD OF ATTACHING FLY STRIPS TO A SLIDE FASTENER CHAIN

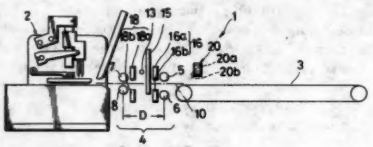
Kazuo Miyakawa, Marietta, Ga.; Tatsuo Osaki, Uozu; Toshiaki Sawada, Toyama, both of Japan, and Kiichiro Ishikawa, Marietta, Ga., assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Oct. 10, 1984, Ser. No. 659,528

Claims priority, application Japan, Oct. 17, 1983, 58-193600

Int. Cl.[4] B21D *53/50*; D05B *3/12*

U.S. Cl. 29—408 **3 Claims**



1. A method of attaching successive fly strips continuously to a continuous slide fastener chain, comprising:

(a) continuously delivering the continuous slide fastener chain to a sewing station;

(b) feeding the successive fly strips one after another to a standby point by a conveyor horizontally spaced from said sewing station by a gap in which said standby point is disposed;

(c) supplying a preceding fly strip from said standby point to said sewing station for sewing said preceding strip onto the fastener chain;

(d) detecting when a trailing end of said preceding fly strip passes a first fixed point upstream of said standby point near a downstream end of the conveyor;

(e) in response to said detection, positively displacing the trailing end portion of said preceding fly strip downwardly to cause the same to be hung in said space while keeping a succeeding fly strip waiting at said standby point for being subsequently supplied to said sewing station;

(f) further detecting when the trailing end of said preceding fly strip passes a second fixed point downstream of said standby point in said gap as the sewing of said preceding fly strip progresses; and

(g) in response to said further detection, supplying said succeeding fly strip to said sewing station for sewing said succeeding fly strip onto the fastener chain.

4,608,746

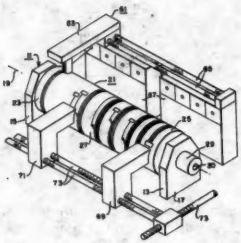
WIRE HARNESS FABRICATION APPARATUS

Tibor Csakvary, Pittsburgh, Pa., assignor to Unimation, Inc., Danbury, Conn.

Filed Mar. 20, 1984, Ser. No. 591,365

Int. Cl.[4] B23Q *41/00*

U.S. Cl. 29—564.4 **6 Claims**



1. An apparatus for wire harness formation comprising:

support means defining an axis,

a cylindrical drum-like member with opposed ends concentrically mounted on said axis for controllable rotational movement, said cylindrical drum-like member having a continuous surface which includes means defining a predetermined pattern of a wire harness and by means of which lengths of wire are routed on said continuous surface and means for demountably receiving and securing thereon one or more lengths of wire routed along said predetermined pattern to form a wire harness which receiving and securing means comprise a plurality of pin-like members and the continuous surface defines a plurality of bores disposed therein according to a predetermined pattern, each of said plurality of bores being adapted to removably receive one of said pin-like members therein, wherein one or more lengths of wire are secured to said pin-like members; and

motive means in communication with said cylindrical drum-like member for effecting the controllable rotational movement thereof.

4,608,747

MULTISPINDLE-AUTOMATIC TURRET LATHE

Helmut F. Link, Aichwald, and Dietmar F. Hafla, Hohengehren, both of Fed. Rep. of Germany, assignors to Index-Werke Komm.-Ges. Hahn & Tessky, Esslingen, Fed. Rep. of Germany

Filed Apr. 26, 1983, Ser. No. 488,785

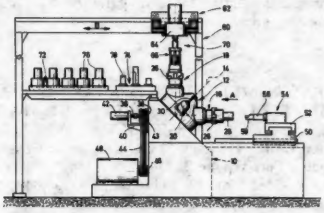
Claims priority, application Fed. Rep. of Germany, May 6, 1982, 3216892

Int. Cl.[4] B23Q *3/157*

U.S. Cl. 29—568 **11 Claims**

1. A multispindle automatic turret lathe comprising a spindle support rotatable as a unit about a central indexing axis, a plurality of work spindles rotatably mounted in said support, each work spindle being mounted in said support for rotation about a separate work spindle axis which is inclined relative to said indexing axis, each work spindle having the same angular position and radial spacing relative to the indexing axis, a further indexing station on said support, a tool position measuring device at said further indexing station, said further indexing

station being arranged on the spindle support in like geometrical position to the indexing axis as the work spindles, and tool supporting means at a working location adjacent to said support, said support being indexable to position said work spindles at said location and to position said tool position measuring device at said location to measure the position of a tool in said tool supporting means.



4,608,748

METHOD OF MANUFACTURING A MEMORY FET WITH SHORTED SOURCE AND DRAIN REGION

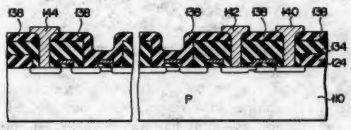
Hideo Noguchi, Yokohama, and Tugunari Iwamoto, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 18, 1982, Ser. No. 390,032

Claims priority, application Japan, Jun. 30, 1981, 56-100654; Jun. 30, 1981, 56-100655; Jun. 30, 1981, 56-100656

Int. Cl.[4] H01L *21/38, 21/425*

U.S. Cl. 29—571 **9 Claims**



7. In the fabrication of a silicon semiconductor field effect memory device wherein spaced apart source and drain areas are formed on a substrate with a channel extending therebetween and a control gate is formed above the channel with an oxide insulating layer covering the gate and device, an improvement to the process that allows the device to be converted into a normally conducting device late in the fabrication process comprising:

masking and etching the device so as to create openings to the source and drain areas on the substrate beside the control gate; and

doping said source and drain areas through said openings so as to expand said areas toward each other, under said gate, until they form a continuous conduction path.

4,608,749

METHOD OF MANUFACTURING A SOLID-STATE IMAGE PICKUP DEVICE

Nozomu Harada, and Yoshiaki Komatsubara, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 22, 1984, Ser. No. 643,232

Claims priority, application Japan, Aug. 23, 1983, 58-153761

Int. Cl.[4] H01L *27/14*

U.S. Cl. 29—572 **8 Claims**

1. A method of manufacturing a solid-state image pickup device having plural pixels, comprising the steps of:

forming on a semiconductor substrate signal storage regions for each pixel, and signal read-out regions;

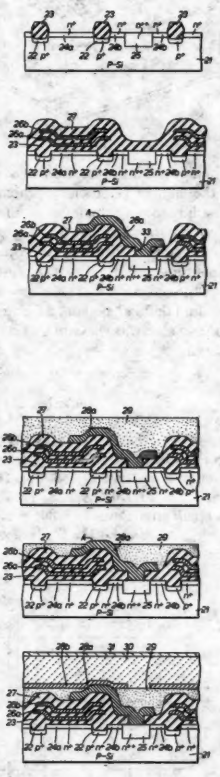
depositing a first insulating film on said signal storage regions and said signal read-out regions;

forming contact holes in said first insulating film;

forming first metallic electrodes on said first insulating film to be electrically connected to said signal storage regions through said contact holes, said first metallic electrodes having projections in a portion thereof;

depositing a second insulating film constituted by an organic material over the entire surface of the device as formed by the preceding step to make the surface thereof substantially flat;

reactive ion etching the entire surface of said second insulating film until the projections of said first metallic electrodes are exposed;



forming on said second insulating film second metallic electrodes constituting pixel electrodes, said second metallic electrodes being connected to said first metallic electrodes at the exposed projections thereof;

depositing a photoconductive film over the whole surface of the device as formed by the preceding step; and

forming a transparent conductive layer on said photoconductive film;

wherein said second insulating film forming step comprises:

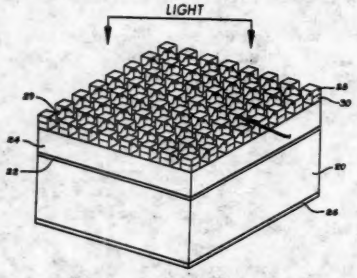
applying a polyimide film so as to cover the projections of said first metallic electrodes, and

applying a photoresist film on said polyimide film to produce a flat surface.

4,608,750
PREPARATION OF PHOTOVOLTAIC DEVICE BY ELECTROCHEMICAL DEPOSITION

Jay A. Switzer, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 518,814, Aug. 1, 1983, Pat. No. 4,492,811.
This application Sep. 24, 1984, Ser. No. 653,353
Int. Cl.[4] H01L *31/00;* **C25D** *9/04, 9/06*
U.S. Cl. 29—572 **31 Claims**



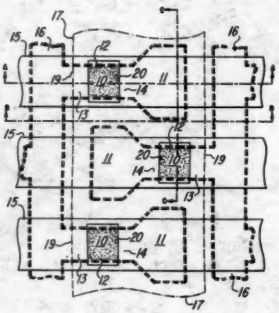
5. A method for the preparation of a photovoltaic device comprising the step of photoelectrochemical deposition of a conductive solid coating material containing a degenerate n-type semiconductor having a band gap from about 0.5 to about 2.35 e.V. which forms a heterojunction with a solid substrate consisting essentially of an n-type semiconductor material.

13. The method defined in claim **5** further comprising attaching a front ohmic electrode having a grid configuration to said coating material.

4,608,751
METHOD OF MAKING DYNAMIC MEMORY ARRAY

David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 399,038, Jul. 16, 1982, which is a division of Ser. No. 137,705, Apr. 7, 1980, Pat. No. 4,345,364.
This application Aug. 7, 1984, Ser. No. 638,442
Int. Cl.[4] H01L *27/04, 29/78*
U.S. Cl. 29—576 B **11 Claims**



1. A method of making a plurality of dynamic semiconductor memory cells of the one-transistor type at a face of a semiconductor body, comprising the steps of:

applying a layer of conductive material on said face overlying and separated from a plurality of cell areas by insulator, each cell area including a transistor area and a capacitor area,

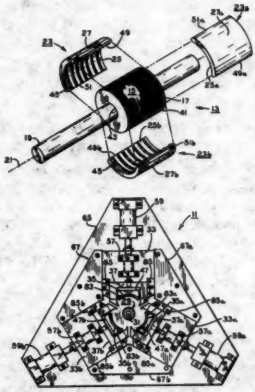
opening a plurality of windows in said layer, each window being over one of said transistor areas,

applying a plurality of conductive strips on said face over said layer but insulated therefrom, said strips extending into said windows to form gates of transistors at said transistor areas.

4,608,752
APPARATUS, METHOD OF OPERATING APPARATUS AND METHOD OF ASSEMBLING A ROTATABLE ASSEMBLY

Alexander Muller, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Filed Mar. 27, 1984, Ser. No. 593,840
Int. Cl.[4] H02K *15/02*
U.S. Cl. 29—598 **36 Claims**



1. A method of assembling a rotatable assembly for a dynamoelectric machine with respect to a preselected reference axis, the rotatable assembly having a preselected outside diameter and including a rotor core having a circumferential surface and secured about a shaft therefor with the rotor core and shaft having a rotational axis, and a set of magnet material elements having generally arcuate inner and outer surfaces, respectively, and the rotatable assembly also having a preselected spatial range between the circumferential surface of the rotor core and the arcuate inner surfaces of the magnet material elements, respectively, the method comprising the steps of:

applying a hardenable adhesive material onto at least one of the arcuate inner surfaces of the magnet material elements and the circumferential surface of the rotor core, respectively;

arranging the rotational axis of the rotor core and the shaft at least generally in alignment with the preselected reference axis;

locating the arcuate outer surfaces of the magnet material elements in positions at least generally coaxially about the preselected reference axis and disposing the arcuate inner surfaces of the magnet material elements in facing relation about the circumferential surface of the rotor core, respectively;

moving the magnet material elements at least generally radially with respect to the preselected reference axis toward the circumferential surface of the rotor core and maintaining the arcuate outer surfaces of the magnet material elements in the located positions thereof, respectively;

positioning the magnet material elements in assembly relation with the rotor core so that the arcuate outer surfaces of the magnet material elements in their located positions at least generally define the outside diameter of the rotatable assembly upon the movement of the magnet material

elements toward the circumferential surface of the rotor core and spacing thereby the arcuate inner surfaces of the magnet material elements within the preselected spatial range from the circumferential surface of the rotor core, respectively;

flowing the hardenable adhesive material at least in part to at least fill the space established between the arcuate inner surfaces of the magnet material elements and the circumferential surface of the rotor core in response to the positioning and spacing step; and

hardening the hardenable adhesive material.

4,608,753

MINIMIZATION OF VOLTAGE DELAY IN LITHIUM OXYHALIDE CELLS

Niles A. Fleischer, Madison, Wis., assignor to Rayovac Corporation, Madison, Wis.

Continuation of Ser. No. 506,988, Jun. 23, 1983, abandoned. This application Dec. 17, 1985, Ser. No. 809,849

Int. Cl.[4] H01M *6/00, 6/14*

U.S. Cl. 29—623.1 **9 Claims**

1. The method for reducing the voltage delay in an electrochemical cell having a lithium or lithium alloy anode, a cathode current collector, and a liquid oxyhalide electrolyte which comprises:

(a) prior to cell assembly, dissolving in said oxyhalide electrolyte a substance from the group consisting of alkyl cyanoacrylates and acrylic and substituted acrylic polymers in order to form a liquid oxyhalide solution; and

(b) during assembly of said cell, placing the said liquid oxyhalide solution in said cell as the electrolyte.

4,608,754

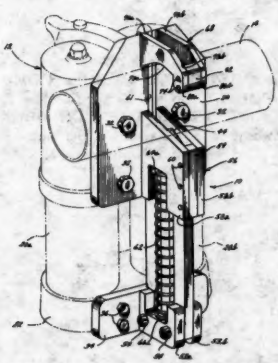
POWER DRIVEN TUBE CUTTER

Kenneth D. Kloster, 6649 Millridge, Maumee, Ohio 43537

Filed Mar. 16, 1983, Ser. No. 475,908

Int. Cl.[4] B23D *21/06*

U.S. Cl. 30—92 **6 Claims**



1. An apparatus for severing a tubular workpiece comprising:

workpiece engaging means adapted to securely engage the workpiece, said workpiece engaging means provided with a channel portion for receiving and retaining the tubular workpiece during the severing operation;

a cutting blade having a cutting edge adapted to be mounted for movement toward and away from said workpiece engaging means;

drive means including a first mounting means for supporting said workpiece engaging means and a second mounting means for supporting said cutting blade in spaced relationship relative to said workpiece engaging means with the workpiece positioned therebetween, said drive means being operative to move said second mounting means toward said first mounting means to cause said cutting edge of said cutting blade to move toward said workpiece engaging means and into severing engagement with the workpiece; and

means connected between said first and second mounting means for moving said second mounting means and said cutting blade away from said first mounting means and said workpiece engaging means.

4,608,755

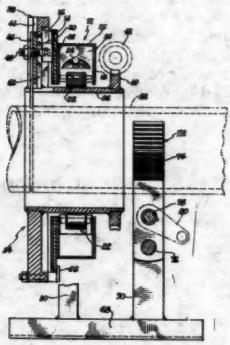
PORTABLE PIPE CUTTER

Morris C. Braasch, P.O. Box 1344, Julian, Calif. 92036

Filed Nov. 13, 1984, Ser. No. 670,566

Int. Cl.[4] B26D *3/16*

U.S. Cl. 30—97 **9 Claims**



1. A portable pipe frame cutter comprising:

(a) a stationary frame;

(b) a rotable annular cutter member journalled in said frame;

(c) said cutter member mounting a plurality of cutting blade elements radially slideable relative to said cutter member;

(d) an annular threaded advance plate having a helical threaded face defined by said frame;

(e) for each of said blade elements, a key having a threaded face engaged with the threaded face of said advance plate;

(f) means rotably driving said cutter member in said stationary frame such that as the keys of the blade elements follow the threads of the threaded face of the advance plate, said blades selectively radially advance or retreat, depending on the direction of rotation of said cutter member, so that said blades can be simultaneously rotated around and advanced into a pipe extending through said annular cutter member, to progressively cut deeper into said pipe until it is completely cut through;

(g) said rotating annular cutter member including a coaxial cylindrical collar; (h) said frame including a bearing ring surrounding said collar and journalling same from the outer surface; and,

(i) said bearing ring being separable into segments to permit the removal of said cutter member therefrom.

4,608,756

TOOL TO PRODUCE A NEW LEADING EDGE ON A FAN BLADE

Harold M. Sharon, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 558,135, Dec. 5, 1983, Pat. No. 4,550,497.
This application May 20, 1985, Ser. No. 736,016
Int. Cl.[4] B23D *79/08*
U.S. Cl. 30—287 4 Claims

1. A cutting tool for use in producing a new leading edge contour on a blade including:
a mounting block;
a handle extending from said mounting block; and
a tool bit secured in said block and having a cutting V notch therein contoured to the desired blade edge shape and the side surfaces adjacent to said edge, said side surfaces conforming to the angle between the blade surfaces adjacent said edge, said bit having noncutting surfaces thereon remote from the edge cutting portion of the notch to guide the tool bit by contact with the opposed surfaces of the blade at points spaced from the edge being cut.

4,608,757

DOUBLE ENDED THROWING KNIFE

Douglas W. Eckerle, 1310 N. Daisy, Escondido, Calif. 92027

Filed Apr. 11, 1985, Ser. No. 722,726
Int. Cl.[4] B26B *3/00*
U.S. Cl. 30—299 13 Claims

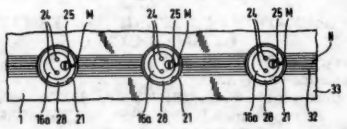
1. A double ended throwing knife comprising:
an elongated double ended blade formed centrally with a shank portion and at its opposite ends with first and second point portions equally balanced with respect to one another;
a first latch element formed on said first point portion;
a second latch element formed on said shank portion;
a handle received telescopically over said blade for telescoping from a throwing position on said shank portion to a carving position over said first point portion; and
releasable latch means mounted on said handle for selectively engaging and releasably latching with said first and second latch elements whereby said latch means may be released and said handle telescoped along said blade to said central throwing position on said shank to expose both point portions of said blade and said latch means latched to engaged with said first latch element so the user may grasp said handle to throw said knife toward a target with both ends exposed and, alternatively, said latch means may be released and said handle telescoped along said blade to said carving position over said first point portion leaving said shank and second point portion exposed therefrom.

4,608,758

ERROR CORRECTION SYSTEM FOR MEASURING INSTRUMENT

Karl-Hermann Voelk, St. Georgen, and Karl-Heinz Wehrstein, Palling, both of Fed. Rep. of Germany, assignors to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Feb. 27, 1984, Ser. No. 583,692
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311562
Int. Cl.[4] G01B *11/04*
U.S. Cl. 33—125 R 8 Claims



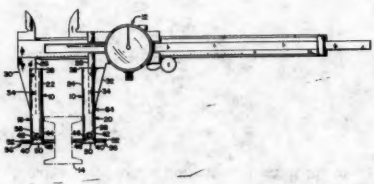
1. In a measuring system of the type comprising a measuring scale coupled to a first object and extending along a measuring direction; a scanning unit positioned to scan the scale and coupled to a second object; and an error correction system comprising an error correction profile, at least one adjusting element for adjusting the position of the correction profile transversely to the measuring direction, a transfer element coupled between the scanning unit and the second object to vary the spacing therebetween in response to the profile, and an error correction scale positioned adjacent to the adjusting element; wherein the adjusting element moves with respect to the error correction scale during adjustment of the position of the correction profile; the improvement comprising:
an index mark carrier which defines an index mark that cooperates with the error correction scale to indicate the position of the adjusting element; and
means for adjustably mounting the index mark carrier to the adjusting element such that the relative position of the index mark carrier with respect to the adjusting element can be varied.

4,608,759

VERNIER AND/OR DIAL CALIPER COMPARATIVE READING POINT CHECKING SELECTIVE ACCESSORY ATTACHMENTS AND THEIR COMBINATIONS

Philip E. Bowhay, 1203 E. Racine St., Bellingham, Wash. 98225

Filed Sep. 21, 1983, Ser. No. 534,488
Int. Cl.[4] G01B *5/02*
U.S. Cl. 33—143 M 1 Claim



1. An accessory assembly of components used in vernier point checking adapted for removable securement to a conventional vernier and/or dial caliper, which is not thereby physically altered, for comparative reading point checking of more portions of machined parts, comprising:
(a) left and right vertical cylindrical positioning bodies, each longitudinally partially slotted half way through the longitudinal diameter, with these longitudinal slots extending vertically and continually from the top and down four fifths of the length of each respective vertical cylindrical positioning body, with each of these slots

being wide enough to closely fit substantially all of an inside facing edge of a conventional leg of the conventional caliper, which otherwise would be normally used in making outside measurements of a machined part;

two spaced threaded holes in each left and right cylindrical positioning body, and threaded set screws threaded into these two spaced threaded holes, which upon tightening, are adapted to hold these left and right cylindrical positioning bodies on respective legs of the caliper;

a thin slot adapted to receive a planar contacting part, extending transversely and longitudinally throughout the last fifth of the length of each vertical cylindrical positioning body;

the last fifth of the length of each vertical cylindrical positioning body being tapered on each side of each cylindrical positioning body;

a bore, extending transversely through the last fifth of the length, where it is tapered, and also arranged parallel to and in contact with the slot, and adapted to receive cylindrical contacting parts;

a threaded hole extending through each of the last fifth of lengths at a right angle to the respective thin slot;

a threaded set screw threaded into this threaded hole extending through each of the last fifth of lengths, which, upon tightening holds a contacting part in the bore and/or slot; and

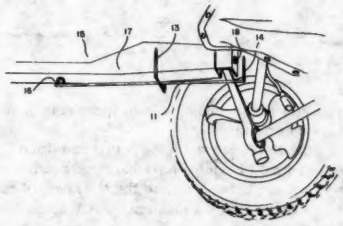
(b) left and right machine part contacting parts, either being initially cylindrical or planar selected from many of different designs, such as rod and/or blade, slidably inserted in the last fifth of the left and right cylindrical positioning bodies, selectably utilizing respective said thin slots and/or bores, and the respective threaded holes and threaded set screws.

4,608,760

FRAME ALIGNMENT INDICATOR

Connie Franks, 7509 Haymarket La., Raleigh, N.C. 27609

Filed Jul. 15, 1985, Ser. No. 754,748
Int. Cl.[4] G01B *5/25*
U.S. Cl. 33—180 AT **9 Claims**



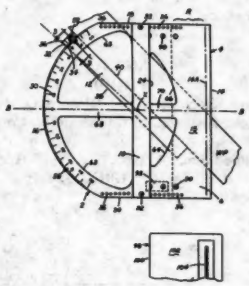
1. A static vehicle frame alignment indicator means comprising: an elongated indicator arm; indicator finger means secured to said elongated indicator arm adjacent one end thereof; and means for attaching said indicator arm to a vehicle frame member such that said indicator finger means extends beyond the end of said frame member, said attaching means including a first connector means secured to the end of said indicator arm opposite said indicator finger means and a second connector means secured to an intermediate portion of said indicator arm whereby when said first and second connector means are mounted on said frame member said indicator finger means will provide a visual indication of whether said frame member is in proper alignment.

4,608,761

PORTABLE PRECISION GUIDE FOR POWERED HAND TOOLS

Charles B. Small, 8804 Citation Dr., Lake Park, Fla. 33410

Filed Dec. 16, 1985, Ser. No. 809,383
Int. Cl.[4] B27B *9/04*
U.S. Cl. 33—471 **12 Claims**



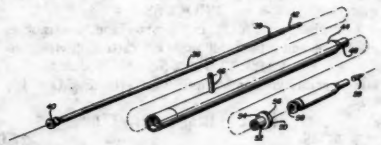
1. A portable precision guide for powered hand tools comprising a base plate having a top surface and a bottom surface, said base plate having a first right-hand straight edge and a first left-hand edge, side edges connecting corresponding ends of said first right-hand straight edge and said first left-hand edge, a guide bar on the top surface of said base plate, said guide bar having a second right-hand straight edge spaced from and parallel to the first right-hand straight edge of said base plate, a table surface being formed on said top surface between the first right-hand straight edge of said base plate and the second right-hand straight edge of said guide bar, a protractor means being formed on said base plate to the right of the first left-hand edge of said base plate, an angle arm, means pivotally mounting said angle arm to the bottom surface of said base plate, said angle arm having a straight edge which can be placed at a plurality of different angles to the first right-hand straight edge of said base plate, said protractor means and angle arm having cooperating indicia and indicating line respectively to indicate the precise angle between the straight edge of said angle arm and the first right-hand straight edge of said base plate, means connecting said angle arm to said base plate to fix said angle arm in relation to said base plate.

4,608,762

BULLET SEATING GAUGE AND METHOD FOR DETERMINING CASE BASE END TO BULLET TIP DISTANCE

Robert F. Varner, Box 167A, Rte. 2, Antwerp, Ohio 45813

Filed Jul. 30, 1985, Ser. No. 760,605
Int. Cl.[4] G01B *3/46*
U.S. Cl. 33—506 **6 Claims**



1. A bullet seating gauge for use with a given cartridge case and bullet combination and for determining the proper case base end-to-bullet tip distance, during reloading operations, which will insure initial seating of the bullet against the rifling of a particular gun barrel adjacent the receiver thereof in which said combination is to be seated, said gauge including a

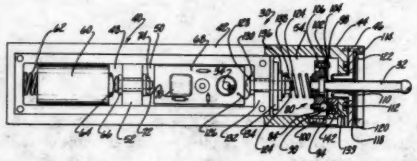
bullet case having a threaded primer pocket bore and a shaft having one threaded end threaded inwardly through said primer pocket bore to a position with the terminal end of said threaded end disposed inwardly of the open bullet receiving end of the bullet case, and a bullet for said case slidingly received in said open case end and including an inner end abutted against said terminal end, said bullet being gradually partially projectable outwardly through said open case end upon further threading of said one shaft end inwardly through said primer pocket bore.

4,608,763

PROBE

Paul A. Manns, Rochester, and Richard O. Juengel, Romeo, both of Mich., assignors to GTE Valeron Corporation, Troy, Mich.

Filed Jun. 14, 1983, Ser. No. 501,994
Int. Cl.⁴ G01B 7/28
U.S. Cl. 33—561 **15 Claims**



1. A probe for use in a turning center to detect contact with another object, said probe comprising:

an elongated housing having a shank portion with a rectangular cross-section generally corresponding in shape to a tool holder;

a stylus projecting from one end of the housing adapted to contact an object wherein the stylus is moved from its rest position;

means formed within the housing shank portion for receiving at least one battery;

optical transmitting means in the housing shank portion, operative to transmit optical signals to a remote receiver;

circuit means contained within the housing shank portion responsive to movement of the stylus from the rest position to couple sufficient power from the battery to drive said optical transmitting means at a given frequency, and said circuit means also being responsive to said stylus returning to its rest position to prevent said transmitting means from transmitting any further signals; and

whereby said probe may be inserted in a slot or the like in a turning center in the same manner as tool holders therein and transmit information relating to stylus contact with an object such as a workpiece without requiring modification of the turning center or like machine.

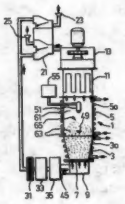
4,608,764

PROCESS OF DRYING A PARTICULATE MATERIAL AND APPARATUS FOR IMPLEMENTING THE PROCESS

Hans Leuenberger, Pfeffingen, Switzerland, assignor to Glatt Maschinen-und Apparatebau AG, Pratteln, Switzerland

Filed May 17, 1985, Ser. No. 735,264
Claims priority, application Switzerland, May 19, 1984, 2484/84
Int. Cl.⁴ F26B 5/06, 13/30
U.S. Cl. 34—5 **27 Claims**

1. A process for drying particulate material that includes a liquid substance to be extracted, the process comprising the steps of: freezing the material within a container in a freezing operation and subsequently drying the material in the same container in a drying operation, wherein a cooling medium having one of the states solid and liquid and particles of the said material are subjected to movement during the said freezing operation in the said container, so that the particles of the material are cooled to a temperature at which the liquid substance is solidified and wherein the cooling medium is separated from the particulate material in the gaseous state, and wherein the particulate material, after the solidification of the liquid substance is dried during the drying operation in the same container by passing gas through the particulate material



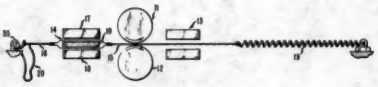
and subjecting the particulate material to motion, wherein the particulate material is held at least during a part of the drying operation at a temperature at which at least a part of the substance to be extracted from it remains in the solid state until it is extracted by sublimation, and wherein vapor generated during the drying operation is carried away from the particulate material by the gas passed through the particulate material together with said gas.

4,608,765

PROCESS AND APPARATUS FOR SIMULATING A ROLLING AND DRYING OPERATION

Dennis E. Gunderson; John F. Hunt, Madison, both of Wis., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 8, 1983, Ser. No. 473,397
Int. Cl.⁴ F26B 7/00
U.S. Cl. 34—12 **8 Claims**



1. Apparatus for simulating a high speed rolling and drying operation comprising:

(a) a specimen of material to be rolled and dried,

(b) a pair of rolls having a nip clearance therebetween, said nip clearance being less than the thickness of said specimen so that said rolls make contact with said specimen when said specimen goes through said nip,

(c) a low mass carrier for the specimen having a leader and a trailer thinner than the nip of the rolls,

(d) a means for quickly accelerating said carrier to the peripheral speed of the rolls and for pulling said specimen into and through the nip of the rolls,

(e) a static dryer for the specimen,

(f) means for quickly decelerating the specimen and carrier such that the specimen comes to rest inside said dryer for a period of time necessary to accomplish desired drying of the specimen,

(g) means for moving said specimen to a location outside of said dryer after said desired drying period, and

(h) means for continuously applying spreading forces to the rolls to eliminate slack and render roll clearance constant.

4,608,766

HORIZONTAL FLUIDIZED-BED DRYER WITH HEAT TRANSFER TUBES

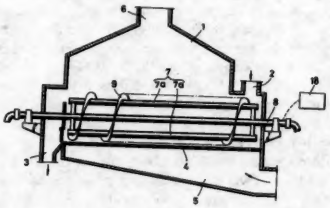
Sumio Kawai; Kazumasa Nagasawa, both of Shizuoka, and Kazuo Kishihata, Shimada, all of Japan, assignors to Kabushiki Kaisha Okawara Seisakusho, Shizuoka, Japan

Filed May 31, 1985, Ser. No. 740,023

Claims priority, application Japan, Jun. 18, 1984, 59-125829

Int. Cl.[4] F26B *17/18*

U.S. Cl. 34—57 A 6 Claims



1. A horizontal fluidized-bed dryer for drying wet feed containing large particles, which comprises:

(a) a horizontal drying chamber having at one end an inlet from which the wet feed is introduced into said drying chamber and at the other end an outlet from which the dried wet feed is discharged from said drying chamber;

(b) a horizontal porous supporting shelf mounted within said drying chamber at the bottom thereof for preventing the wet feed from falling during drying and means for causing an upward air flow through the horizontal porous supporting shelf to cause the feed to be fluidized;

(c) at least one hollow axle extending horizontally through said drying chamber over said supporting shelf for passage of a heating medium and adapted to be driven by a drive for rotation;

(d) a heat transfer tube assembly including at least one spiral tube mounted on and around the respective hollow axle for fluid communication therewith; and

(e) a spiral blade mounted on said spiral tube and extending around the periphery of an imaginary cylindrical figure generated by rotation of said spiral tube about said hollow axle, said spiral blade being operable to push the large particles of the wet feed on said supporting shelf progressively toward said outlet when said hollow axle and said spiral tube are rotated by said drive.

4,608,767

DRYING APPARATUS FOR TUBULAR TEXTILE WARES

Peter Dornier, Lindau/Bodensee, Fed. Rep. of Germany, assignor to Lindauer Dornier Gesellschaft mbH, Lindau/Bodensee, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 320,739, Nov. 12, 1981, Pat. No. 4,446,632. This application May 7, 1984, Ser. No. 607,940

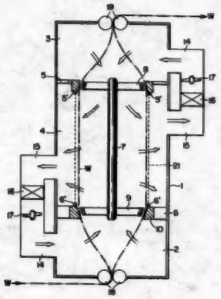
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1983, 3325918

The portion of the term of this patent subsequent to May 8, 2001, has been disclaimed.

Int. Cl.[4] F26B *13/12*

U.S. Cl. 34—103 4 Claims

1. A drying apparatus for tubular textile material, comprising a housing, three air flow zones in said housing separated by two partition means forming a central air suction zone between two air blowing zones, air outlet means (15) in said housing communicating with said air suction zone, air inlet means (14) in said housing communicating with said air blowing zones, said air suction zone having a defined length beween said two partition means, an expander levitated in said central air suction zone for expanding the tubular textile material as it travels through said central air suction zone in which air is sucked through the wall of the textile material from the inside out while in said air blowing zones air is blown into the tubular textile material from the outside in, gas-permeable jacket means (21, 21′, 22″) separate from said air suction zone, said separate gas-permeable jacket means being operatively located in said suction zone inside said housing means axially between said partition means, mounting means on each of said two partition means, said mounting means facing each other and



into said air suction zone, for securing said separate gas-permeable jacket means at both ends to said partition means, said separate gas-permeable jacket means surrounding said tubular textile material along its entire length travelling through said suction zone sufficiently close to said tubular textile material for substantially preventing billowing of said tubular textile material along its entire length inside said suction zone.

4,608,768

ATHLETIC SHOE HAVING A SHOCK-ABSORBING RUNNING SOLE AND A PROCESS FOR MANUFACTURING SAID ATHLETIC SHOE

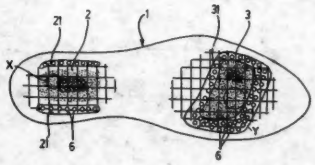
Peter R. Cavanagh, Pine Grove Mills, Pa., assignor to Puma-Sportschuhfabriken Rudolf Dassler KG, Fed. Rep. of Germany

Filed Jul. 13, 1984, Ser. No. 630,398

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1983, 3338557

Int. Cl.[4] A43B *13/18, 13/12, 13/04*

U.S. Cl. 36—28 32 Claims



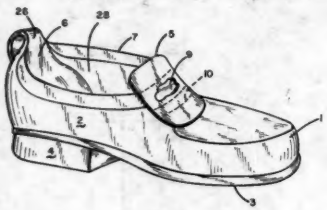
1. An athletic shoe having a shock-absorbing running sole that has at least one flexible intermediate openwork support extending at least approximately in parallel with a major plane of the running sole, wherein the intermediate openwork support is arranged in a softly elastic midsole that is provided between an insole and an outer sole, and plugs made of a material that is harder than that of the midsole are provided, said plugs being insertable, in a direction normal to said plane of the sole, into openings in the intermediate openwork support at least in sections of the running sole that are highly or maximally stressed during running.

4,608,769

SHOE CONSTRUCTION

Lee S. Sturlaugson, P.O. Box 178, Park River, N. Dak. 58270

Filed Sep. 28, 1984, Ser. No. 655,442
Int. Cl.[4] A43B *21/36*
U.S. Cl. 36—68 **7 Claims**



1. An improved shoe construction comprising:

(a) a sole portion;

(b) an upper having an internal lining, a heel end, a toe end and a foot-receiving opening defined by a side wall secured to said sole portion and projecting upwardly from said sole portion, said side wall having a pair of transversely extending flaps adapted to conform to the wearer's metatarsal arch;

(c) a length adjustable, elasticized securing mechanism fastened to and extending between said transversely extending flaps;

(d) rear counter means located at the heel end of said upper, said rear counter means including a generally rigid, nonbending, laterally arcuate, heel conforming insert member disposed between said lining and said upper; and

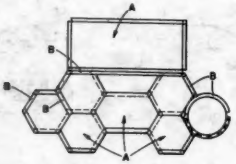
(e) tongue means located beneath the length adjustable, elasticized securing mechanism and attached to said upper of a size sufficient to span the opening between said pair of transversely extending flaps and having an exterior layer of material, an interior layer of material and a reinforcing stiffening member disposed between said exterior and interior layers to inhibit wrinkling and folding of said tongue means as the wearer's foot is being inserted through said foot-receiving opening and into said shoe.

4,608,770

SNAP FITTING PICTURE FRAME COLLAGE

Robert R. Gray, 6297 Carol Dr., Brook Park, Ohio 44142

Filed Jul. 30, 1984, Ser. No. 635,908
Int. Cl.[4] A47G *1/06*; G09F *1/12*
U.S. Cl. 40—152 **10 Claims**



1. A collage of picture frames which are readily, manually snap fit together and apart to be selectively arranged and rearranged, at least first and second frames each comprising:

a plurality of interior walls extending forward to rearward and integrally interconnected end to end in a regular geometric array to define a picture receiving region therein, the interior wall geometric array having a forward facing edge and a rearward facing edge,

a front face portion through which a received picture is viewable integrally connected with the interior wall array forward facing edge such that the picture receiving region is defined rearward of the front face portion surrounded by the interior walls;

the planar front face portion overhanging a first half of the interior walls and terminating adjacent a second half of the interior walls;

a plurality of rearward projections integrally connected to the overhanging front face portion and projecting rearwardly therefrom, each rearward projection extending parallel to and generally coextensive with a corresponding adjacent interior wall such that linearly extending rearward facing grooves are defined therebetween;

a rear portion extending integrally outward from the second half of the interior walls a distance commensurate with the front face portion overhang;

a plurality of forward projections integrally connected to the rear portion and projecting forward therefrom, each forward projection extending parallel to and coextensive with a corresponding, adjacent interior wall such that a plurality of linear extending, forward facing grooves are defined between the forward projections and the corresponding, adjacent interior walls;

the rearward projections of the first frame each being receivable in one of the forward facing grooves of the second frame and the forward projections of the second frame each being receivable in one of the rearward facing grooves of the first frame;

each of the rearward projections having a planar outer wall surface disposed substantially perpendicular to the front face portion and each of the second half interior walls having a planar outer wall surface which defines one surface of the facing groove disposed substantially perpendicular to the front face portion, such that the rearward projection planar outer wall surface of the first frame abuts the second half interior wall outer surface of the second frame, whereby the planar outer wall surfaces fix the first and second frames in a coplanar relationship;

the rearward and forward projections each having sloping inner walls, such that the sloping inner rearward and forward projection walls of connected first and second frames abut;

each of the first frame rearward projections being dimensioned for tight, frictional engagement into the second frame forward facing grooves such that the adjacent second frame forward projection is cammed outward by the receipt of the first frame rearward projection in the second frame forward facing groove, such that resiliency of the outward cammed second frame forward projection holds the first and second frames frictionally engaged;

each of the first frame forward projections being dimensioned to be loosely received in each of the second frame rearward facing grooves such that the second frame forward projection is cammed outward by the first frame rearward projection without camming the first frame portion rearward projection such that deformation of the first frame adjacent the first frame rearward projection which would move the second frame out of a coplanar relationship with the first frame is avoided.

4,608,771

ANIMATED HEART NOVELTY DISPLAY

Satish Mehta, 3136 Deluna Dr., Rancho Palos Verdes, Calif. 90274

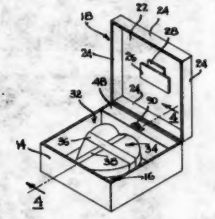
Filed Jan. 30, 1985, Ser. No. 696,339
Int. Cl.[4] G09F *19/12*
U.S. Cl. 40—427 **22 Claims**

1. An emotional gift and decorative device in the stylized representation of a human heart to provide a connotation of a movement thereof, said device comprising:

(a) a container having a container section with a three dimensional representation of a human heart therein and which has an interior chamber and an exterior surface which is capable of being shifted outwardly and inwardly

with respect to the remaining portion of the representation of the human heart to provide a pulsating action, and which representation of the human heart has a configuration and approximate size and shape of a stylized human heart such that when pulsating it would appear as a representation of a beating human heart,

(b) a source of stored electrical energy located within said container,



(c) motive means operatively connected to said source of stored electrical energy and being powered thereby, and

(d) means connected to said motive means and extending into said interior chamber of said representation of the human heart to cause the exterior surface to be moved inwardly and outwardly thereby in a cyclic pattern in response to energization of said motive means to simulate a beating movement of a human heart.

4,608,772

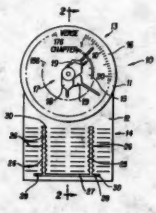
MARKER

Carlton Gill, 114-07 127th St., South Ozone Park, N.Y. 11420

Filed Aug. 19, 1983, Ser. No. 524,963

Int. Cl.[4] G09F *11/04*

U.S. Cl. 40—495 **4 Claims**



1. A marker for separately indicating a plurality of related information comprising:

a base plate including a first section having at least one numeral row circularly arranged thereon, and a second section adjacent to the first section and having an area on which a plurality of printed items are indicated;

pointing means including a central axis situated in the center of the first section of the base plate, a plurality of pointers rotationally held by means of the central axis to indicate numerals on the first section, and a spring situated around the central axis for pressing the pointers to prevent the pointers from free rotation relative to the base plate, said pointers being independently moved relative to each other without influencing other pointers and being marked to be distinguished from each other, and

indicating means situated in the second section of the base plate, said indicating means including two first guide grooves parallel to each other and extending through the area where the printed items are indicated, each first guide groove having a plurality of notches adjacent to the items indicated on the second section, a second groove extending perpendicularly to the first guide grooves and connected to said second groove having extensions at both ends thereof extending beyond the first guide grooves, and a plurality of sliding pins slidably situated in said first guide grooves and second groove, said sliding pins being disposed in ends of said first guide grooves, said extensions when not used and being located in the notches to indicate the items when used, said sliding pins being marked to correspond to the respective pointers of the pointing means for recording necessary information by mutual cooperation of the pointing means and indicating means.

4,608,773

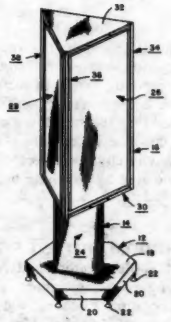
KIOSK DISPLAY UNIT

O. Timothy White, Carnesville, Ga., assignor to Royston Corporation, Royston, Ga.

Filed Feb. 14, 1985, Ser. No. 701,773

Int. Cl.[4] G09F *15/00*

U.S. Cl. 40—606 **21 Claims**



1. A rigid sheet metal structural element comprising:

a plurality of sheet metal panels, each panel having a face with two opposite straight edges, said edges being parallel to each other, and flange, integrally formed on the panel, at each edge;

the panels being arranged with each flange of each panel overlapping a flange of a next adjacent panel to form an overlapping pair of flanges, and with each of said straight edges of each face meeting one of said straight edges of the next adjacent panel in close parallel relationship to form a hollow structure, the cross-sections of which, in planes to which said edges are perpendicular, are closed upon themselves;

the flanges of each overlapping pair having interengaging means formed thereon for preventing the overlapping flanges from separating from each other, the interengaging means requiring a relative sliding movement of the two flanges of each overlapping pair, parallel to said straight edges, for engagement of the flanges, the required relative movement, for engagement of the flanges along both edges of any given panel face with overlapping adjacent flanges, being such that the adjacent flanges move in opposite directions relative to said given panel face.

4,608,774

CONSTRUCTION FOR ROACH TRAPS

Daniel A. Sherman, 76 Ninth Ave., New York, N.Y. 10011

Filed Mar. 11, 1983, Ser. No. 474,236

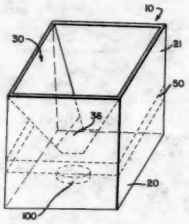
Int. Cl.[4] A01M *1/02*

U.S. Cl. 43—114 **15 Claims**

1. An improved gravity operated insect trap for use with an attractant comprising;

a rectangular, open ended receptacle for receiving the insect, and

a chute member adapted to be secured to, and supported by, the open end of the receptacle, wherein the chute comprises three contiguous wall surfaces which project the same vertical distance into the receptacle interior and another contiguous wall surface which projects a portion



of the vertical distance into the receptacle to form an off-set opening into the interior of the receptacle wherein the said another contiguous wall surface projects a minimum of two thirds and a maximum of three quarters of the vertical distance that the said three contiguous wall surfaces project into the receptacle interior to form said off-set opening whereby the off-set opening increases the effective surface area of the chute opening.

4,608,775

MUSHROOM MUTANT STRAINS

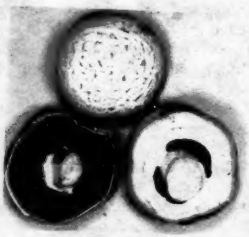
Timothy J. Elliott, Littlehampton, and Michael P. Challen, Midhurst, both of England, assignors to National Research Development Corporation, London, England

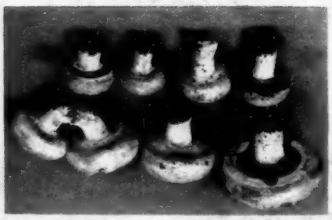
Filed Jul. 25, 1984, Ser. No. 634,158

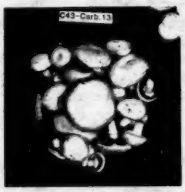
Claims priority, application United Kingdom, Jul. 29, 1983, 8320535

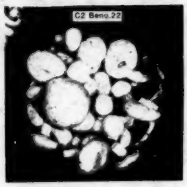
Int. Cl.[4] A01H *15/00*

U.S. Cl. 47—1 R **7 Claims**









1. A biologically pure culture of a strain of *Agaricus bisporus* selected from the group consisting of the *Agaricus bisporus* strains IMI 287345, 287343, 287344 and 287342 deposited on 9th July 1984 at the Commonwealth Mycological Institute, Ferry Lane, Kew, Surrey TW9 3AF, England, under the provisions of the Budapest Treaty on the International Recognition of the Deposit of Micro-organisms for Patent Purposes.

4,608,776

CABINET FOR CUT-OFF FLOWERS

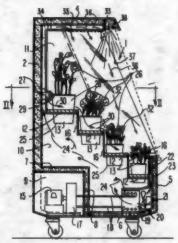
Hermen Kooy, 46, Stommeerkade, EK Aalsmeer, Netherlands

Division of Ser. No. 403,050, Jul. 29, 1982, Pat. No. 4,458,501.

This application Apr. 16, 1984, Ser. No. 600,386

Int. Cl.[4] A47F *3/04*

U.S. Cl. 47—58 **18 Claims**



1. The method of prolonging the lives of cut flowers while they are on display, which comprises the steps of:

unidirectionally flowing cooled air through a partially confined space to define a display chamber having an interface between the flowing cooled air and ambient air through which the interior of the display chamber may be viewed and accessed;

forcibly inducting the cooled air from the display chamber at a location therein which preserves the unidirectional flow of cooling air through the display chamber, and confining the inducted air to recycle through a cooling chamber and back into the display chamber;

locating water within the cooling chamber and cooling the air flowing through the cooling chamber to cool the water; and

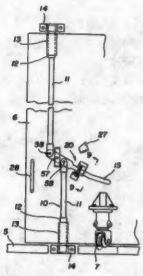
immersing the stems of cut flowers in the water located and cooled within the cooling chamber while locating their blooms within the display chamber.

4,608,777

SLIDING DOOR APPARATUS

Hiroshi Okamoto, Funabashi, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed May 9, 1984, Ser. No. 608,435
Claims priority, application Japan, May 11, 1983, 58-83241
Int. Cl.[4] E05D *15/10*
U.S. Cl. 49—214 14 Claims



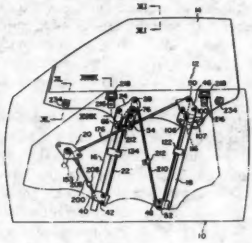
1. A push-in type sliding door apparatus for a vehicle having a fixed side wall with a door opening therein, an upper rail and a lower rail fixed on said side wall and extending adjacent said opening, each of said rails having a linear portion which extends in parallel to said side wall and is laterally outwardly spaced from said side wall, a curved portion extending from one end of said linear portion generally toward said side wall, and a branch rail at an intermediate point of said linear portion and extending between said linear portion and said side wall generally in the same direction as that of said curved portion, at least one sliding door, at least two upper rollers provided on the upper portion of said sliding door and adapted to be engaged with said linear portion of the upper rail, one of said upper rollers being adapted to engage said curved portion of the upper rail and the other upper roller being adapted to engage said branch rail of the upper rail when said door is closed, at least two lower rollers provided on the lower portion of said door and adapted to be engaged with said linear portion of the lower rail, one of said lower rollers being adapted to engage said curved portion of the lower rail and the other lower roller being adapted to engage said branch rail of the lower rail when said door is closed, said apparatus comprising a push-in mechanism provided on said door adjacent one side, and strikes adapted to be mounted on the upper and lower portions of the fixed side wall adjacent said one side, said push-in mechanism including a handle bar pivotally mounted on said door for swinging movement in a plane which is substantially parallel to the plane of said door, lock shafts slidably mounted on said door substantially in said plane of said handle bar and linked to said handle bar for movement of said lock shafts upon pivotal movement of said handle bar, said strikes and said lock shafts having cooperating wedging means thereon, whereby a pushing-in force is generated on the door toward said side wall by the wedging action of said lock shafts and strikes when said door is substantially closed and the handle bar is pivoted.

4,608,778

DOOR WINDOW REGULATOR

Daiichi Shiraishi; Eiji Iwasaki, and Ryoichi Fukumoto, all of Aichi, Japan, assignors to Aisin Seiki Co., Ltd. and Toyota Jidosha Kabushiki Kaisha, both of, Japan

Filed Jun. 5, 1985, Ser. No. 741,440
Claims priority, application Japan, Jun. 6, 1984, 59-83804[U]; Jun. 6, 1984, 59-83805[U]; Jun. 6, 1984, 59-83806[U]; Jun. 6, 1984, 59-83807[U]
Int. Cl.[4] E05F *11/48*
U.S. Cl. 49—352 26 Claims



1. A door window regulator for vertically moving a door window glass of a vehicle, comprising:

(a) a guide member secured to a door;

(b) a slider secured to the lower portion of said door window glass and guided by said guide member;

(c) pulleys rotatably supported at the respective upper and lower portions of said guide member;

(d) a wire stretched between said upper and lower pulleys on said guide member and connected to the lower portion of said door window glass at a portion of said wire between said upper and lower pulleys such that said wire forms a closed loop;

(e) a driving unit adapted to actuate a portion of said closed loop wire; and

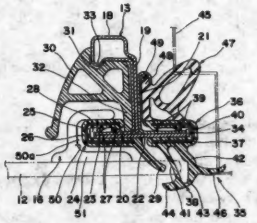
(f) a wire guide shoe projecting from said guide member and contacting the portion of said wire between said upper and lower pulleys such as to limit the movement of said wire toward the inside of the compartment of said vehicle.

4,608,779

AUTOMOBILE DOOR ASSEMBLY

Tatsuo Maeda, and Takeshi Konishi, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 2, 1985, Ser. No. 688,369
Claims priority, application Japan, Jan. 11, 1984, 59-2706[U]; Mar. 22, 1984, 59-39982[U]; Mar. 22, 1984, 59-2708
Int. Cl.[4] E05F *11/38*
U.S. Cl. 49—374 10 Claims



1. A door assembly for an automobile having a door body, which comprises:

a window sash including a pair of upright guide rail assem-

blies extending upwardly from the door body in spaced relation to each other, and a top guide rail assembly extending between the upright guide rail assemblies;

a window pane adapted to be raised from and lowered into the door body and having at least a pair of upright edges and a top edge, said edges of said window pane being configured to follow the contour of the window sash defined by the upright and top guide rail assemblies, respectively, said edges of said window pane being positioned generally outwardly of the window sash with respect to the interior of the automobile;

each of said guide rail assemblies including an inner peripheral flange lying in a plane generally parallel to the window pane, and a generally U-sectioned guide rail member covered by an elastic material and having a generally U-shaped groove, said guide rail member being mounted on the window sash with said U-shaped groove receiving therein said respective inner peripheral flange;

at least one first guide shoe having a guide groove defined therein, said first guide shoe being secured to the window pane with the guide groove of said first guide shoe slidingly receiving one of the upright guide rail assemblies;

at least two second guide shoes each having a guide groove defined therein, said second guide shoes being secured to the window pane in spaced relation to each other with the respective guide grooves of said second guide shoes slidingly receiving the other of the upright guide rail assemblies; and

a garnish moulding for substantially concealing the guide rail assemblies, said garnish moulding having an engagement recess defined therein and a fitting lug integrally formed therewith, said garnsih moulding being fitted to the guide rail assemblies with a protrusion of the guide rail asemblies engaging in said engagement recess and with said fitting lug firmly sandwiched between the guide rail member and the inner peripheral flange.

4,608,780

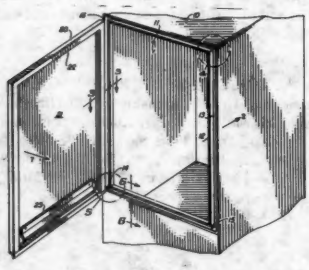
SPRAY CHANNELING DOOR SEAL

William J. Van Noy, 16016 N. 33rd Ave., Phoenix, Ariz. 85023

Filed Jun. 22, 1984, Ser. No. 623,392

Int. Cl.[4] E05D *7/00*

U.S. Cl. 49—400 **14 Claims**



1. In a door having a first, spray-impinging face and a second, non-spray-impinging face, a spray-channeling door seal comprising:

a portal periphery channel, said portal periphery channel abutting said spray-impinging face when said door is in closed position; and

door periphery maze means releasably coupled to said portal periphery channel for diversion and drainage of impinging spray, said door periphery maze means coupled to said spray-impinging face;

wherein said portal periphery channel comprises:

spray deflection means for deflection of impinging spray away from the periphery of said first spray-impinging face;

peripheral cavity means for coupling said portal periphery channel to said door periphery maze means; and

drainage means coupled to said door periphery maze means transverse said door from said second, non-spray-impinging face for draining liquid residue of impinging spray in excess of impinging spray deflected by said spray deflection means.

4,608,781

SEPARATING DEVICE FOR DOOR CASES ON FLOORS WITH DIFFERENT HEIGHTS

Peter Anders, Ahornallee 47, 1000 Berlin 19, Fed. Rep. of Germany

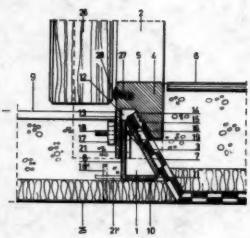
PCT No. PCT/DE83/00170, § 371 Date Jun. 8, 1984, § 102(e) Date Jun. 8, 1984, PCT Pub. No. WO84/01598, PCT Pub. Date Apr. 26, 1984

PCT Filed Oct. 5, 1983, Ser. No. 619,463

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1982, 3237348

Int. Cl.[4] E06B *1/70*

U.S. Cl. 49—468 **16 Claims**



1. A separating device for door cases between adjacent floors having different heights, comprising:

bottom rail member means adapted for attachment to a door case, said bottom rail member means including a movable spreader rail;

top rail member means, said top rail member means being located above and slidably connected to said bottom rail member means, for movement in a vertical direction for adjustment of the height of an upper surface of said top rail member means relative to the height of a floor adjacent a door case;

sealing means disposed between said movable spreader rail and said top rail member means; and

clamping means, operatively connected to said movable spreader rail, for moving said spreader rail to clamp said sealing means between said movable spreader rail and said top rail member means.

4,608,782

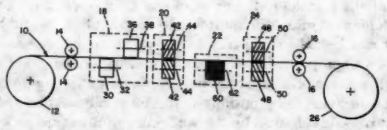
METHOD AND APPARATUS FOR SHARPENING RAZOR BLADES

Henryk J. Chylinski, Haverhill, Mass., assignor to The Gillette Company, Boston, Mass.

Filed May 17, 1985, Ser. No. 735,335

Int. Cl.[4] B24B *9/00*

U.S. Cl. 51—80 B **7 Claims**



1. Cutting tool sharpened edge forming apparatus compris-

ing guide structure for passing a cutting tool element on which it is desired to form a sharpened edge along a path,

abrading means mounted adjacent said path for forming a primary sharpened edge on the cutting tool element,

a secondary sharpened edge forming stage including a secondary edge forming wheel mounted for rotation adjacent said path, said secondary edge forming wheel having a helical abrading land formed thereon for forming spaced recesses along the length of said sharpened edge, and

means for advancing the cutting tool element along said sharpening path and rotating said secondary edge forming wheel in synchronism with the advance of said cutting tool element along said sharpening path to abrade a series of spaced recesses along said primary sharpened cutting edge of the cutting tool element, said recesses forming secondary sharpened cutting edge portions spaced at regular intervals along said primary sharpened cutting edge, and said primary and secondary sharpened cutting edge portions forming an essentially continuous undulating sharpened cutting edge along said cutting tool element.

5. A method for sharpening the edge of a cutting tool comprising the steps of

forming a primary sharpened edge on the cutting tool element,

disposing an abrading wheel that has a helical abrasive land formed on its cylindrical surface for rotation about an axis generally parallel to a sharpening path,

and moving said cutting tool element along said sharpening path in synchronism with the rotation of said abrading wheel to abrade a series of spaced recesses in said primary sharpened edge, said recesses forming secondary sharpened cutting edge portions spaced at regular intervals along said primary sharpened cutting edge, and said primary and secondary sharpened cutting edge portions forming an essentially continuous undulating sharpened cutting edge on said cutting tool element.

4,608,783

FEELER UNIT FOR POSITIONING SHEET GLASS PROCESSING TOOLS

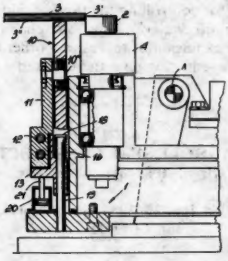
Franco Bavelloni, Appiano Gentile, Italy, assignor to Z. Bavelloni S.p.A., Bregnano, Italy

Filed Dec. 19, 1983, Ser. No. 562,616

Claims priority, application Italy, Dec. 23, 1982, 24969 A/82

Int. Cl.[4] B24B *9/08*

U.S. Cl. 51—127 **3 Claims**



1. A back-up roller mechanism for sheet glass in combination with a feeler unit for positioning sheet glass processing tools, the combination comprising a common frame for supporting the back-up roller mechanism and for carrying at least one feeler unit having a feeler roller, the back-up roller mechanism comprising a movable back-up roller near said feeler roller and defining a plane of lay of the back-up roller, support means for rotatably supporting said back-up roller and defining an axis of rotation for said back-up roller extending transverse to said plane of lay thereof, said back-up roller having a circular perphery, said periphery defining a plane of lay of sheet glass tangential to said periphery when said roller is in its operative position and transverse to the plane of lay of said back-up roller and, on said common frame, guide means for said support means for controllably moving said back-up roller at least in one direction perpendicular to said axis of rotation thereof thereby to controllably move said back-up roller in a retracted position away from said plane of lay of said sheet glass when said sheet glass is being moved in its processing position towards said feeler roller and to controllably move said back-up roller in an operative position towards said plane of lay of said sheet glass when said sheet glass has reached said processing position thereof in engagement with said feeler roller and wherein said support means and said guide means are composite support and guide means having a first guiding component member structure comprising

first bracket means, guiding rod means extending transverse to said plane of lay of said sheet glass and in slidable guiding engagement with said first bracket means allowing slidable movement of said first bracket means along said guiding rod means, pressure fluid operated cylinder and piston means on said common frame and connected with said first bracket means for moving alternatively bothways said first bracket means along said guiding rod means from an operative position of said back-up roller to a retracted position thereof and viceversa,

second bracket means carrying said back-up roller, guiding bar means carried by said first bracket means, said guiding bar means extending parallel to said plane of lay of said sheet glass at a distance therefrom and perpendicular to said axis of rotation of said back-up roller, said guiding bar means being in slidable guiding engagement with said second bracket means and second pressure fluid operated cylinder and piston means carried by said first bracket means and connected with said second bracket means for controllably moving alternatively bothways said second bracket means along said guiding bar means.

4,608,784

WORK SPINDLE DEVICE

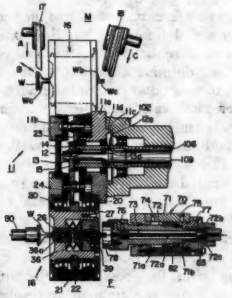
Matsuhiro Fukushima; Hitoshi Kaifu, and Yoshinori Oyobiki, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 7, 1984, Ser. No. 679,269

Claims priority, application Japan, Dec. 12, 1983, 58-191888[U]

Int. Cl.[4] B25B *5/00*

U.S. Cl. 51—237 R **4 Claims**



1. A work spindle device for a machine tool, comprising:

a rotor having a central hollow and a pair of tapered holes each having an axis aligned with an axis of rotation of said rotor;

means for rotatably supporting and driving said rotor;

a clamp member having a pair of collets on respective ends

thereof and a central axial through hole for insertion of a workpiece therein, each of said collets being insertable in one of said tapered holes so as to be fitted therein;

spring means for normally urging said collets and said tapered holes to fit respectively with each other so as to clamp said workpiece in said rotor; and

means for releasing fitting engagement between said collets and said tapered holes to unclamp said workpiece from said rotor;

said collets are push-out type collets;

said rotor comprises a hollow casing body, an end cover fixed to said casing body, and a movable casing fitted slidably in said casing body;

one of said tapered holes is defined in said end cover, and the other of said tapered holes is defined in said movable casing; and

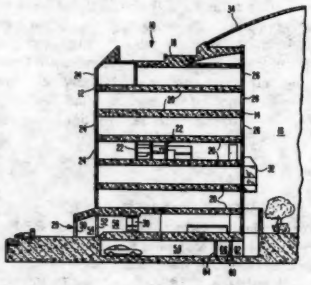
said spring means serves to shorten the distance between said tapered holes.

4,608,785

ENVIRONMENTALLY CONTROLLED BUILDING

James Rhodes, Columbus; Michael Wren, Rushville; Paul W. Lantz, and George W. Acock, Jr., both of Columbus, all of Ohio, assignors to James A. Rhodes & Associates, Columbus, Ohio

Filed Feb. 11, 1985, Ser. No. 700,254
Int. Cl.[4] E04B *1/345*
U.S. Cl. 52—2 **11 Claims**



1. An environmentally controlled building suitable for use as a residential apartment building, a commercial building or a professional or business office building, or a combination thereof, said building comprising:

an outer circumferential wall forming an outer building perimeter and defining the building exterior;

an inner circumferential wall within said outer circumferential wall and defining an atrium within the building;

at least one of said outer circumferential wall and said inner circumferential wall having fenestrations therethrough;

a substantially rigid roof bridging said outer circumferential wall to said inner circumferential wall, and a plurality of interior floors and walls, cooperating with said outer circumferential wall and said inner circumferential wall to define a multi-storey, multi-unit building interior;

a second roof covering the atrium;

pressure sensing means for sensing the ambient atmospheric pressure outside the building;

pressurizing means for pressurizing the building interior and the atrium above the ambient atmospheric pressure outside the building;

first control means responsive to the ambient atmospheric pressure sensed by said pressure sensing means for controlling said pressurizing means to adjust the air pressure within the building interior and the atrium in response to variations in the ambient atmospheric pressure outside the building so that when there is a first difference between the ambient atmospheric pressure and the air pressure within the building and the atrium and the ambient atmospheric pressure changes in a given direction by a first amount, the air pressure within the building and the atrium initially changes in the given direction by a second amount less than the first amount, thereby changing the difference between the ambient atmospheric pressure and the pressure within the building and the atrium, following which the air pressure within the building and the atrium changes further in the given direction to return the difference between the ambient atmospheric pressure and the pressure within the building and the atrium to the first difference; and

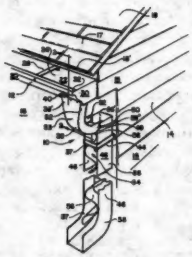
air lock means cooperating with at least some of the fenestrations for permitting personnel to enter and exit the building interior and atrium without substantial loss of pressure from the building interior and the atrium.

4,608,786

DOWNSPOUT FOR BUILDING GUTTERS OR THE LIKE

Tony D. Beam, P.O. Box 777, Stanley, N.C. 28164

Filed Dec. 10, 1985, Ser. No. 807,290
Int. Cl.[4] E04D *13/08*
U.S. Cl. 52—16 **19 Claims**



1. A downspout structure for discharging run-off water from a building gutter or the like, said downspout structure comprising means defining an elongate generally U-shaped open channel adapted for generally upright disposition for receiving said run-off water adjacent an upper end of said channel-defining means and directing said run-off water to a lower discharge end thereof, said channel-defining means including water deflector means interiorly of said channel arranged along the length thereof for controlling the flow of said run-off water to retain said run-off water within said channel, said channel permitting the expulsion of leaves and other debris from said channel to prevent clogging thereof and to facilitate easy cleaning thereof.

4,608,787

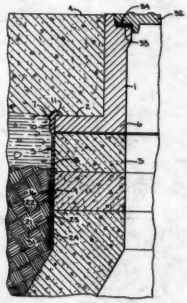
MANHOLE SEAL CONSTRUCTION

Franklin J. Carlson, 1081 Wisconsin Ave., Okauchee, Wis. 53069

Filed Jun. 25, 1984, Ser. No. 624,453
Int. Cl.[4] E02D *29/14*
U.S. Cl. 52—20 **9 Claims**

1. A manhole sealing assembly, comprising a manhole frame defining a manhole and having an outwardly extending flange and having a lower surface, a chimney having an upper surface to support said frame and having an outer peripheral surface disposed generally flush with the outer periphery of said flange, said flange being directly supported on the upper surface of said chimney and said upper and lower surfaces having a joint therebetween, a resilient sealing ring disposed along the outer periphery of said flange and along the outer surface of said chimney and extending across said joint, said sealing ring including an upper hook-like section composed of a vertical

leg and a single generally horizontal leg extending radially inward from said vertical leg, the included angle between said legs being an acute angle when the sealing ring is unattached to said frame, said generally horizontal leg being disposed in engagement with the upper surface of said flange, said sealing ring also including a central stretchable section and having a



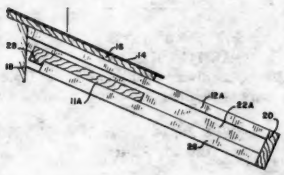
lower clamping section, and clamping means for clamping said lower section to the outer surface of said chimney, said central section being in a taut condition and relative movement between said flange and chimney causing said central section to stretch to maintain said horizontal leg in sealing engagement with said flange.

4,608,788

ADJUSTABLE OVERHANG PANEL FOR BUILDING EAVE

William H. Porter, P.O. Box 249, Saugatuck, Mich. 49453, and Cynthia F. McKean, Saugatuck, Mich., assignors to William H. Porter, Saugatuck, Mich.

Filed Dec. 5, 1983, Ser. No. 557,969
Int. Cl.⁴ E04B *7/16*
U.S. Cl. 52—64 **3 Claims**



1. Structural means supported by a building having at least one lateral wall, said structural means comprising:

first and second spaced, parallel beam rafters, each of said beam rafters having a length and also having a distal end portion extending beyond said lateral wall and recessed portions on respective facing surfaces thereof, wherein said beam rafters are inclined downward in proceeding toward the distal end portions thereof and wherein respective proximal ends of said recessed portions thereof do not extend to said lateral wall;

a roof structure positioned upon and supported by said first and second beam rafters and including an eave portion extending beyond said lateral wall to an intermediate position along the length of said first and second beam rafters; and

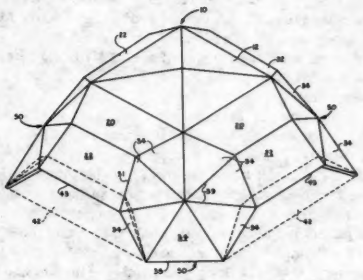
a panel positioned between and supported by said first and second beam rafters, said panel continuously displaceable between a first position adjacent the distal end portions of said beam rafters and a second position adjacent said lateral wall and beneath the eave portion of said roof structure, said panel including lip means on an edge portion thereof proximal to said lateral wall, wherein with said lip means positioned within the space between said lateral wall and the recessed portions of said beam rafters and engaging the respective proximal ends of the recessed portions of said beam rafters, said panel is securely maintained in said second position by gravity.

4,608,789

STAR DOME STRUCTURE

Lyle E. Willis, 212 Sheridan Ave., DeLand, Fla. 32720

Filed Sep. 9, 1983, Ser. No. 530,710
Int. Cl.⁴ E04B *1/32*
U.S. Cl. 52—81 **8 Claims**



1. A dome structure comprising:

a base;

a four-sided star dome;

a set of four pendetives for supporting said star dome;

a set of four column panels supporting said set of pentatives;

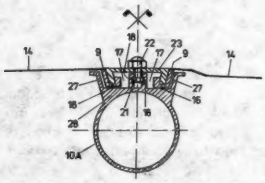
a set of four heptagonal panels, each of said panels having a lower edge thereof resting on said base, upper edges of each of said heptagonal panels attached to the edges of adjacent ones of said pendetives and adjacent ones of said column panels.

4,608,790

TRUSSING, PARTICULARLY THREE-DIMENSIONAL TRUSSING, MADE OF ELONGATED MEMBERS AND JOINT ELEMENTS

Helmut Eberlein, Würzburg, and Otto Kornberger, Hettstadt, both of Fed. Rep. of Germany, assignors to MERO-Raumstruktur GmbH & Co., Würzburg, Fed. Rep. of Germany

Filed Dec. 13, 1983, Ser. No. 560,841
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1982, 3246203
Int. Cl.⁴ E04B *1/32*
U.S. Cl. 52—81 **6 Claims**



1. Trussing, particularly three-dimensional trussing, made of elongated members and joint elements, which support plate

elements, e.g., roof elements, having a top surface and outside edges, wherein the elongated members have upper portions with recessed holding spaces running substantially parallel to their longitudinal axes for a packed connection of the outside edges of the plate elements, characterized by a combination of the following elements:

(a) said holding spaces (17) have a smooth generally cup-shaped cross section,

(b) said outside edges (16) of plate elements (14) are angled inwardly and downwardly from said top surface and have a generally cup-shaped cross section,

(c) a packing strip (9) is disposed in each of said outside edges (16) of plate elements (14),

(d) the outside edges (16) of adjacent plate elements (14) are positioned on both sides of each elongated member (10) with their cup-shaped cross section inserted into said holding spaces (17) in each elongated member (10),

(e) an elongated cover rail (23) extends over each elongated member (10) and has downwardly angled arms (24) extending into the cup-shaped outside edges (16) of the adjacent plate elements, said arms (24) being in engagement with the packing strips (9) disposed in said outside edges (16),

(f) fastening means (21) connects said cover rail (23) and said elongated member (10), said fastening means pressing said arms (24) against said packing strips (9),

(g) said cover rail having a generally flat upper surface in substantial alignment with the top surfaces of adjacent plate elements (14), and

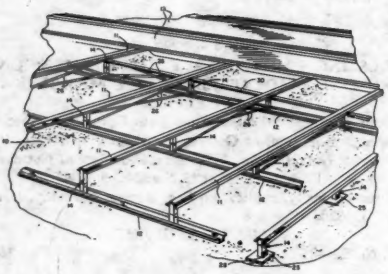
(h) a generally flat cover plate secured to each joint element and extending over the adjacent portions of said plate elements (14), said elongated members (10) and said cover rails (23), said cover plate being in sealing engagement with the underlying adjacent portions of said plate elements (14) and said cover rails (23).

4,608,791

SLOPE BUILD-UP SYSTEM FOR ROOFS

Richard R. McClure, Basehor, Kans., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Aug. 5, 1985, Ser. No. 762,319
Int. Cl.[4] E04B *7/16*
U.S. Cl. 52—90 **17 Claims**



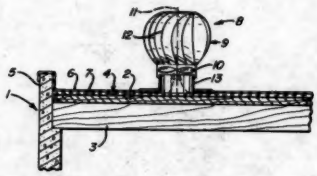
1. A slope build-up system for roofs comprising a plurality of spaced elongated spanning members adapted to be placed above an existing substantially flat roof, independently vertically adjustable stanchions supporting the spanning members at spaced intervals along their lengths whereby the spanning members can be held in a common plane having a required degree of slope relative to the existing roof, and the spanning members being adapted to receive and support thereon roof paneling, and each vertically adjustable stanchion comprising a pair of interfitting longitudinally adjustable channel sections having spaced adjustment apertures adapted to register and receive a locking screw to establish the required height for each stanchion.

4,608,792

ROOF MEMBRANE HOLDOWN SYSTEM

Dennis H. Gerber, Los Gatos, Calif., assignor to Burke Industries, Inc., San Jose, Calif.

Filed Oct. 12, 1984, Ser. No. 660,436
Int. Cl.[4] E04F *17/04*; E04D *13/16*
U.S. Cl. 52—199 **8 Claims**



1. A roof system overlying and supported by a roof substructure comprising:

a. a substantially gas impervious substrate having an upper surface and covering substantially said entire roof substructure;

b. a perimeter structure surrounding said substrate;

c. a roof membrane which is substantially impervious to the passage of moisture and gas having an upper and lower surface and is substantially sealably attached to said perimeter structure forming a substantially gas impervious chamber;

d. air conduit means interposed between said substrate and said roof membrane within said substantially impervious chamber for permitting the flow of gas in the space between said substrate and roof membrane; and

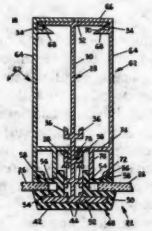
e. suction means operably connected to said air conduit means within said substantially gas impervious chamber for withdrawing air from said air conduit means within said substantially gas impervious chamber thereby reducing the pressure between said membrane and said substrate and creating a holdown force on said membrane.

4,608,793

STRUCTURAL GASKET WALL

Wayne R. Yost, Cadillac, Mich., and Lynn Tipton, Houston, Tex., assignors to Cadillac Rubber & Plastics, Inc., Cadillac, Mich.

Filed Sep. 26, 1983, Ser. No. 535,885
Int. Cl.[4] E04H *1/00*
U.S. Cl. 52—235 **31 Claims**



1. A structural gasket system for an exterior wall comprising a plurality of panels having a width and length in planar juxtaposed relationship supported by an interior fixed structural member, the structural gasket system comprising:

a rigid structural framework formed by intersecting metal mullions which are joined together at intersections thereof and secured to said interior fixed structural member, each of said mullions having gasket-engaging means at an outer end thereof and a retainer-engaging means inwardly of the outer end thereof;

an elastomeric gasket member having a one piece molded portion surrounding and contacting the gasket-engaging means of said mullion, extending along said mullion inwardly of said panels, having an outer laterally-extending body portion and an inner laterally-extending flange forming channels the width of said panels inwardly of at least the outer end of said gasket-engaging means of said mullions for capturing edge portions of said panels; and

retainer means between each side of said mullion and said gasket, said retainer means having means to grip said retainer-engaging means and being so shaped so as to engage said one piece molded portion to lock said gasket member onto said mullion and to force the gasket inner flange against an edge portion of a panel within the channels formed in said elastomeric gasket member.

4,608,794

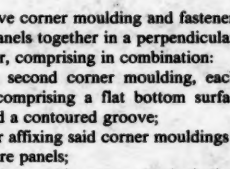
CORNER MOULDING AND FASTENER

Fred Delise, Clearwater, Fla., assignor to LRD, Inc, New Port Richey, Fla.

Filed Oct. 30, 1985, Ser. No. 792,806

Int. Cl.[4] F16B *9/02, 12/44;* A47B *57/00*

U.S. Cl. 52—288 **5 Claims**



1. A decorative corner moulding and fastener for fastening two furniture panels together in a perpendicular arrangement to form a corner, comprising in combination:

a first and a second corner moulding, each said corner moulding comprising a flat bottom surface, a flat top surface, and a contoured groove;

nail means for affixing said corner mouldings to the respective furniture panels;

an insert member, said insert member including a semi-circular outer flange and a perpendicularly disposed inside flange coinciding with the perpendicularity of the furniture panels; and

cross-member means for rigidly securing the furniture panels in a perpendicular arrangement with one another,

whereby said semi-circular outer flange is positioned over all portions of said corner mouldings except for said contoured grooves thereof to conceal said corner moulding while leaving exposed said contoured grooves.

4,608,795

FACINGS OF INORGANIC MOLDING COMPOSITIONS FOR BUILDING COMPONENTS

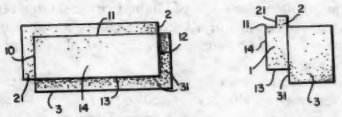
Karl H. Neuschaeffer, Leichlingen; Paul Spielau, Troisdorf-Eschmar; Hans-Werner Engels, Troisdorf-Sieglar, and Guenter Zoche, Bonn, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Dec. 16, 1983, Ser. No. 562,219

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1982, 3246621

Int. Cl.[4] E04C *1/00*

U.S. Cl. 52—309.12 **13 Claims**



1. A facing for use as a building component comprising a solid molding having a visible part of a cured, inorganic molding composition with a specific gravity of 1.3–2.5 g/cm^3 produced from:

10–30% by weight of an aqueous, potassium-alkaline potassium silicate solution;

15–40% by weight of a reacitve pulverulent oxide mixture with contents of amorphous SiO_2 and aluminum oxide; and

20–75% by weight of fillers; and

a foam member bonded to the visible part, said foam member having a foamed structure comprised of an inorganic or organic foam material.

4,608,796

MULTIPLE PANE GLASS UNIT

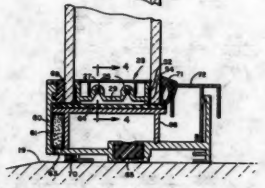
John R. Shea, Jr., Baltimore, Md., assignor to Hordis Brothers, Inc., Pennsauken, N.J.

Filed Jun. 22, 1984, Ser. No. 623,386

The portion of the term of this patent subsequent to Aug. 14, 2001, has been disclaimed.

Int. Cl.[4] E06B *3/24*

U.S. Cl. 52—399 **18 Claims**



1. A multiple pane glass unit comprising

an exterior glass sheet having spaced-apart horizontal and vertical edge portions

an interior glass sheet having horizontal and vertical edge

portions aligned with said horizontal and vertical edge portions of said portions of said exterior glass sheet,

a horizontal head spacer located between aligned horizontal edge portions of said exterior and interior glass sheets,

a horizontal sill spacer positioned between aligned horizontal edge portions of said glass sheets,

a pair of vertical spacers positioned between aligned vertical edge portions of said exterior and interior glass sheets,

said horizontal and vertical spacers being interconnected at their ends and being secured to the glass sheets at the edge portions thereof for spacing said glass sheets apart,

said vertical spacers being constructed and arranged to provide structural support for the glass sheets against wind loads or the like,

said vertical spacers including a first channel member extending along one pair of aligned vertical edge portions of the glass sheets and a second channel member extending along the other pair of aligned vertical edge portions of the glass sheets,

said first channel member including a first leg portion which extends along the vertical edge portion of the associated exterior glass sheet and a second leg portion which extends along the vertical edge portion of the associated interior glass sheet,

said second channel member including a first leg portion which extends along the vertical edge portion of said associated exterior glass sheet and a second leg portion which extends along the vertical edge portion of said associated interior glass sheet,

said first and second channel members being mounted substantially entirely within the .interior of the spaced-apart glass sheets,

and gasket means attached to said first leg portions of said first and second channel members for use in sealing the exterior vertical joint between adjacent glass units on installation thereof in abutting relation,

said gasket means including a first gasket strip mounted on the first leg portion of said first channel member and a second gasket strip mounted on the first leg portion of the second channel member,

said first and second gasket strips being arranged to contact one another along the vertical joints of side-abutting glass units to form a butt joint and being constructed and arranged to be substantially flush with the exterior glass sheets and to provide a weather-seal joint along the abutting vertical edges thereof.

4,608,797

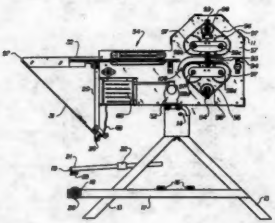
AUTOMATIC PACKAGING MACHINE

Lyle F. Shabram, Jr., 71 Rancho Rd., Carmel Valley, Calif. 93924; Jeff Shabram, Carmel, Calif.; Paul Shabram, Monterey, Calif., and Kevin Shabram, Carmel, Calif., assignors to Lyle F. Shabram, Jr., Carmel Valley, Calif.

Filed Jul. 8, 1985, Ser. No. 752,571

Int. Cl.[4] B65B *1/30*

U.S. Cl. 53—504 **9 Claims**



1. A machine for automatically bagging articles within a thermoplastic film comprising in combination,

a first tracking means following a web of the thermoplastic film as it moves longitudinally for generating a signal pulse for each unit length of film web moving by a reference position,

a folding plane means for folding the web longitudinally aligning its side edges together, the articles being serially introduced into a volume partially enclosed by the longitudinally folded web,

a continuous side sealing means receiving the aligned side edges of the web for intermittently advancing the folded web longitudinally while sealing the edges of the advancing web together forming a longitudinal film tube enclosing the articles,

a cycling transverse sealing means moving with the tube as it intermittently advances longitudinally for sequentially engaging, sealing and severing the film web transversely between each pair of articles serially enclosed within the tube every cycle,

cycle clocking means following the transverse sealing means for generating a series of signal pulses corresponding to the cycle positions of the transverse sealing mechanism,

a programmable process controller means receiving the signal pulses from the first tracking means and from the clocking means for controlling the continuous side and the cycling transverse sealing means according to an algorithm relating a desired longitudinal dimension for each article containing thermoplastic film bag to a number of signal pulses received from the tracking means, and

programming means for programming the programmable controller means with the desired longitudinal dimension of the article containing bag.

4,608,798

MODULAR BUILDING COMPONENT FOR PATIO AND DECK FLOORS, PLANTERS, BENCHES AND THE LIKE

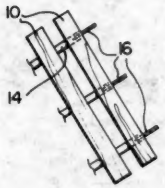
Barry Spiers, 6-124 Connie Street, Concord, Ontario, Canada

Filed Jul. 13, 1983, Ser. No. 513,427

Claims priority, application Canada, Apr. 28, 1983, 426966

Int. Cl.[4] E04C *2/42;* **E04F** *15/02*

U.S. Cl. 52—581 **3 Claims**



1. A modular building component comprising

a series of elongated members arranged in parallel closely spaced apart relationship, each said member having at least two openings extending transversely therethrough; and

at least one pair of elongated flexible hollow tubes extending through said openings transversely of said members and secured in and to each respective member, each said tube having an exposed bore at each end to receive a plug for joining with an adjacent modular building component.

4,608,799

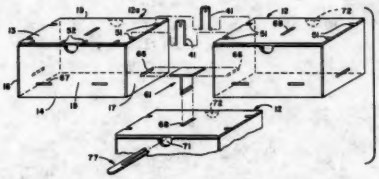
BUILDING BLOCK SYSTEM

Stanley Hasegawa, 868 Yuba St., Richmond, Calif. 94805

Continuation-in-part of Ser. No. 687,865, Dec. 31, 1984. This application Aug. 16, 1985, Ser. No. 766,243

Int. Cl.[4] E04B *1/48;* A63H *33/10*

U.S. Cl. 52—582 9 Claims



1. A building block system comprising:

A plurality of hollow block formed of rigid material,

each of said blocks having at least one openings in the top thereof at each of the ends of the block and further openings including a transverse slot in the center of the top of a block and a transverse slot in each end of the block, and

block connectors including a first inverted U-shaped connector adapted to fit into the said top end openings to join contiguous horizontally aligned blocks and a T-shaped connector adapted to fit into end slots of adjacent blocks and into a top slot of a lower block to connect successive courses of blocks.

4,608,800

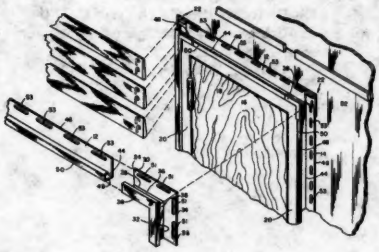
CORNER PIECE FOR VINYL SIDING RETAINERS

Richard Fredette, P.O. Box 31921, Lafayette, La. 70503

Filed Dec. 19, 1984, Ser. No. 683,352

Int. Cl.[4] E06B *1/26*

U.S. Cl. 52—656 6 Claims



1. A corner piece for covering junctions between adjacent horizontal and vertical retainer strips which retain siding to a wall around right angled openings in said wall, said openings having horizontal and vertical frame components, the corner piece comprising:

a generally L-shaped base plate for fastening to said wall having a first leg integral with a second leg, the first leg being defined by an inner and an outer edge, the second leg being defined by an inner and an outer edge; and

a first and a second flange extending outwardly from said base plate and said wall when said base plate is fastened to said wall, said first and second flange extending continuously along the inner edges of the first and second legs, each said first and second flange being comprised of first and second members, the first member being perpendicular to the base plate, the second member being held in spaced, substantially parallel relationship to the plate by the first member, the second members presenting a continuous, L-shaped barrier that forms a channel in cooperation with the base plate and first member.

4,608,801

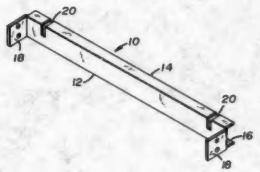
FLOOR BRACING MEMBER FOR A CERAMIC TILE FLOOR

William J. Green, Lake Forest, and Ralph P. Semmerling, Arlington Heights, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Jun. 18, 1984, Ser. No. 622,007

Int. Cl.[4] E04C *2/42*

U.S. Cl. 52—664 10 Claims



1. A floor assembly comprising a ceramic tile overlay; a sub-floor to which the ceramic tile overlay is bonded; a horizontal array of spaced-apart, parallel, C-shaped metal joists which serve as the major support for the sub-floor, each joist having an upright web portion, upper and lower flanges spaced apart by and extending horizontally away from the web, a pendant return flange extending perpendicularly from the upper horizontal flange; and a plurality of floor bracing members connecting adjacent joists at right angles to each, each floor bracing member comprising a web, a flange co-planar with the upper flange of an adjacent joist and extending perpendicularly in such plane from a lateral edge of the web, the flange and web of the bracing member having a common slot which receives the pendant return flange of the joist, and two connector plates, one at each longitudinal end of the web, which abut the upright webs of adjacent joists and are fastened thereto.

4,608,802

CONNECTOR FOR USE IN SPACERS FOR MULTIPLE-PANE WINDOWS

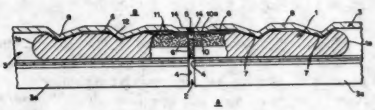
Franz Bayer, Elzach, Fed. Rep. of Germany, assignor to Franz Xaver Bayer Isolierglasfabrik KG, Elzach, Fed. Rep. of Germany

Filed Jul. 30, 1984, Ser. No. 635,442

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1983, 3327366

Int. Cl.[4] E06B *3/66*

U.S. Cl. 52—788 30 Claims



1. In a spacer for the panes of a multiple-pane window, the combination of first and second deformable tubular components having respective end portions arranged in a substantially straight line, said end portions having adjacent end faces defining a gap; an elongated connector including a substantially straight plug having first and second sections disposed in the interiors of the respective components, and a composite abutment disposed between said end faces and partially filling said gap, said abutment comprising at least two portions which are spaced from one another circumferentially of said gap, and

each of said sections having at least one recess, the respective components having depressed portions extending into the respective recesses to hold the sections against extraction from the respective components; and a mass of sealing compound filling at least a portion of the remainder of said gap.

4,608,803

APPARATUS FOR FILLING BAGS

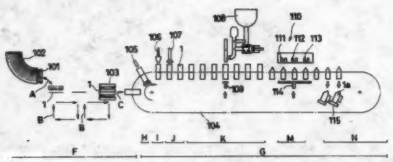
Yozo Araki, Nagoya, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Jun. 15, 1984, Ser. No. 620,887

Claims priority, application Japan, Jun. 15, 1983, 58-107284; Oct. 5, 1983, 58-186314; Oct. 5, 1983, 58-186315; Nov. 28, 1983, 58-223508

Int. Cl.[4] B65B *43/46*

U.S. Cl. 53—202 **7 Claims**



1. A bag-filling apparatus having a pair of chain conveyors capable of transporting bags having an opening, in the direction of their thickness, gripper means supported in a manner movable at right angles to the direction of running of said chain conveyors and capable of gripping both end edges of the opening of the bag, and guide rails adapted to control the movement of the gripper means, characterized in that a plurality of carriers is disposed between said chain conveyors and such that one carrier is behind the next in the running direction of the chain conveyors, with each said carrier being provided with a pair of rods movable at right angles to the direction of transportation of the bags in said running direction, and such that a plurality of gripper means is provided on each carrier, with each gripper means including a pair of opposed grippers for gripping correspondingly said end edges of the opening of the bag to be gripped thereby, with one said gripper of each gripper means being attached to one of the rods and the other said gripper of the same gripper means being attached to the other of the rods, said guide rails being arranged for moving the rods in the axial direction of the rods for adjusting the respective distance between each pair of opposed grippers.

4,608,804

BOTTLE GUIDE SUPPORT ASSEMBLY

Anton J. Wild, 182 Blvd., Kenilworth, N.J. 07033

Filed May 7, 1985, Ser. No. 731,427

Claims priority, application Fed. Rep. of Germany, May 8, 1984, 3416962

Int. Cl.[4] B65B *21/14, 39/00*

U.S. Cl. 53—262 **24 Claims**

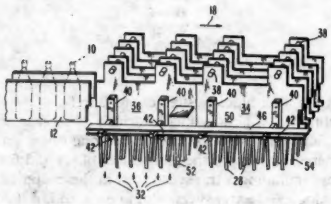
1. A bottle divider grid assembly capable of disassembly for use with a horizontal bottle supply conveyor comprising:

(a) a lower divider means comprising a plurality of vertical lower plate means spatially disposed parallel with respect to one another extending longitudinally with respect to the direction of movement of the bottle supply conveyor, said lower plate means defining a plurality of slot means extending vertically therein;

(b) a plurality of grid support assemblies each defining a channel means extending vertically therethrough, said channel means adapted to interlock with said slot means of said lower divider means to be removably mounted into one of said slot means, each said grid support assembly including guiding fingers extending downwardly therefrom along each opposite side of said lower plate means to define an array of bottle guiding paths extending downwardly thereadjacent;

(c) a securement means for detachably retaining said grid support assembly with said channel means thereof extending into said slot means of said lower divider means comprising:

(1) an upper divider means comprising a plurality of upper plate means spatially disposed parallel with respect to one another extending longitudinally with respect to the direction of movement of the bottle supply conveyor and oriented immediately above and adjacent to said lower plate means, said upper plate means being



engageable with respect to said grid support assemblies to urge same into position retained in said slot means;

(2) lateral retaining means secured with respect to each of said upper plate means for maintaining same in spaced parallel relationship with respect to one another and to facilitate removal of each of said upper plate means simultaneously for selective removal and replacement of said grid support assemblies and said guiding fingers; and

(3) an alignment means secured with respect to said upper divider means to maintain correct orientation between said upper plate means and said lower plate means.

4,608,805

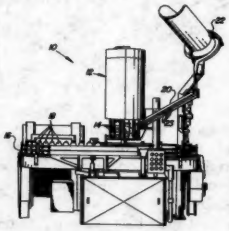
SCREWCAPPING MACHINE

Frank M. Kelly, Richmond, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 29, 1985, Ser. No. 792,502

Int. Cl.[4] B67B *3/20*; B65B *7/28*

U.S. Cl. 53—308 **9 Claims**



1. A screwcapping machine comprising a housing having a cam formed on an inner surface thereof, a turret partially enclosed in said housing which retains a plurality of spindles each containing a cam follower which contacts said cam to impart reciprocal motion thereto, each of said spindles having a screwcapping head attached to an end thereof, drive means for independently rotating said turret relative to said housing and for rotating said spindles about their own axes and control means for actuating said screwcapping head to tighten a screw closure onto a prethreaded container at a desired torque value, said control means including a supply source of pressurized air,

an air distribution valve fixed to said housing and fluidly connected to said supply source, a rotatable air union connected to each of said spindles, a first air hose connected between said air distribution valve and each of said air unions, a passageway formed longitudinally through each of said spindles and being in fluid communication with a pair of poppet valves located in said attached screwcapping head, said poppet valves being movably by said pressurized air to cause a chuck mounted on said screwcapping head to open and close so as to release and grasp said closure, respectively, each passageway housing a hollow stem having a first end which extends into a bore formed in said respective air union and having a predetermined axial clearance between said first end and an adjacent end of said bore, and a second end which contacts a second air hose which terminates in said screwcapping head, whereby as a screw closure is grasped by said screwcapping head and is lowered and tightened onto said container, said stem will move upward into said axial clearance to allow for further downward travel of said screwcapping head.

4,608,806

CAPPING MACHINES

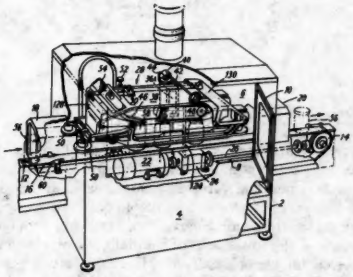
James K. Haslam, Wimborne, and Sidney W. Waters, Poole, both of England, assignors to Metal Box plc, Berkshire, England

Filed Aug. 8, 1983, Ser. No. 521,107

Claims priority, application United Kingdom, Aug. 17, 1982, 8223653

Int. Cl.[4] B67B *3/20*

U.S. Cl. 53—314 21 Claims



1. A capping machine for applying removable closure members to containers and including container-advancing means for moving the containers in succession in a generally-horizontal, longitudinal forward direction, the machine having container support means for supporting the containers thereon during their forward movement, and a capping head above the container support means, the capping head having a body and including also a pair of elongate, longitudinally-extending side support members for engaging the containers between them during the said forward movement, wherein the capping head includes a parallelogram-type structure comprising a lower longitudinal portion including the side support members, a pair of end portions each pivoted to the lower longitudinal portion and each pivotally mounted on the capping head body about a transverse axis, and an upper longitudinal portion pivotally connected to and between the end portions, the capping head further including securing means for securing the parallelogram-type structure in a predetermined altitude with respect to the capping head body, and said securing means being adjustable so as to vary at will the said altitude whereby to vary the height of the side support members above the container support means.

4,608,807

PROCESS FOR WRAPPING A ROTATING BALE OF A BACKED MINERAL FIBER STRIP WITH A PROTECTIVE STRIP THAT IS APPLIED DURING WINDING OF THE BALE, FOR PACKAGING

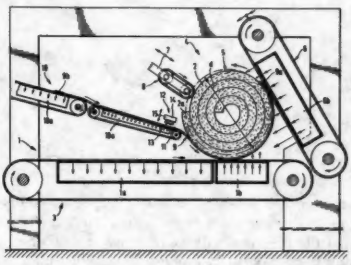
Werner Skripalle, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Isover Saint-Gobain, Courbevoie, France

Filed Apr. 20, 1984, Ser. No. 602,491

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1983, 3314289

Int. Cl.[4] B65B *11/04, 63/04*

U.S. Cl. 53—399 9 Claims



1. A process for wrapping a rotating bale of backed mineral fiber strip in the form of a felt-roll with an outer closed-face backing strip with protective wrapping applied as part of the winding process for packaging which comprises:

(a) bringing the protective wrapping, having a coating of adhesive material at the back end thereof, into the circumferential area of the rotating bale with the front end thereof, with a length exceeding the circumference of the bale and being frictionally connected to the bale; wherein the frictional sticking connection between the front end of the protective wrapping and the bale is produced exclusively by an adhesion effect caused by the presence of a volatile liquid forming a substantially continuous film deposited between the inner surface facing the bale and the bare outer surface of the backing strip, allowing the volatile liquid to evaporate to eliminate the initial adhesion effect; and

(b) turning the bale and pressing the back end of the protective wrapping onto the outside of the winding of the protective wrapping, therebelow, to attain a lasting bonding, wherein the front end of the protective wrapping is placed on the bale at a distance from the outside end of the last winding of the felt roll, and wherein the length of the protective wrapping exceeds the circumference of the enclosed bale substantially only by the circumferential width of the bonding zone between the back end of the protective wrapping and the outside of the winding of the protective wrapping lying thereunder.

4,608,808

APPARATUS AND METHOD FOR CASE PACKING FLEXIBLE BAGS

Philip J. Ryan, and Harris B. McKee, both of Dallas, Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

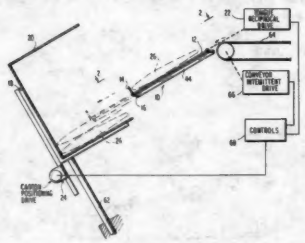
Filed Jun. 22, 1984, Ser. No. 623,406

Int. Cl.[4] B65B *1/24*

U.S. Cl. 53—436 5 Claims

4. Method for case packing products in flexible bags, said bags being partially compressible, the method comprising: positioning a carton with its top open in a bag-receiving position; feeding a row of flexible product-containing bags onto a tongue assembly, said tongue assembly having a flat plate for supporting the sides of the bags and a movable lip for supporting the bottoms of the bags; inserting the tongue assembly containing the rows of flexible product-containing bags into

the open carton; moving the movable lip from a bag-supporting position to a non-supporting position to allow the row of flexible product-containing bags to drop to the bottom of the carton, with the top edges of the bags disposed toward the top of the carton; removing the tongue assembly from the carton and indexing the carton into position to receive another row of flexible product-containing bags; feeding a new row of flexible



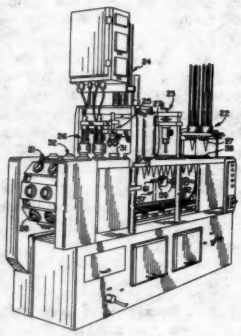
product-containing bags onto the tongue assembly and reinserting the tongue assembly into the carton; moving the carton so that the previously deposited row of flexible product-containing bags is partially compressed against the flat plate; depositing a new row of flexible product-containing bags into the carton in the same manner as the previous row and repeating the bag compressing and depositing procedure until the carton is filled.

4,608,809

METHOD AND APPARATUS FOR FILLING AND PACKAGING A FLOWABLE PRODUCT

Ronald R. Francis, Hamilton Square, N.J., and Martin Mueller, Wonder Lake, Ill., assignors to General Foods Corporation, White Plains, N.Y.

Filed Nov. 8, 1984, Ser. No. 669,545
Int. Cl.[4] B65B *7/28*
U.S. Cl. 53—471 **27 Claims**



18. A method of forming closed container structures including intermittently transporting the containers on a conveyor along a generally horizontal path in an upright position past a plurality of processing stations for filling said containers with a flowable product, and thereafter closing and sealing the containers, comprising:

(a) dispensing the containers in sequence from a nested stack of said containers at a first station and dropping said containers onto the conveyor for conveyance therealong while supported in said upright position;

(b) filling said containers at a second station with a requisite quantity of flowable product, said filing being through an opneing of each container;

(c) seating a preshaped closure fitment within the opening of each of the filled containers on the conveyor to thereby define a lip portion of each filled container that extends beyond a peripheral edge of said closure fitment;

(d) interengaging said closure fitments and the respective containers on which said fitments are seated at a fourth station to form a closed container structure, said interengaging including a crimping procedure comprising inwardly and downwardly folding the container lip portion over the peripheral edge of the closure fitment and onto an inner face of the closure fitment by inwardly and downwardly moving crimping segments to form said closed container structure; and

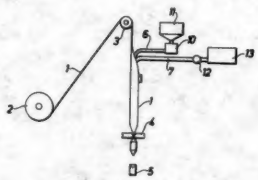
(e) sealing the folded lip portion of each container to the inner face of each of the closure fitments to produce sealed container, and conveying said sealed containers to a discharge end of the apparatus.

4,608,810

VALVE ARRANGEMENT ON PACKING MACHINES

Giorgio Bordini, S. Prospero, Italy, assignor to Tetra Dev-Co, Modena, Italy

Filed Jul. 23, 1985, Ser. No. 757,951
Claims priority, application Sweden, Jul. 31, 1984, 8403923
Int. Cl.[4] B65B *37/00*
U.S. Cl. 53—551 **22 Claims**



1. A valve arrangement on a packing machine comprising a delivery pipe for contents extending substantially vertically and two co-operating valve elements situated at the lower end of the pipe, one of which is movable between an open and a shut position, the second valve element being arranged to be stationary at the lower end of the delivery pipe, the movable valve element being axially displaceable between an upper, open position in which an annular discharge gap is formed between the valve elements and a lower position in which it shuts the said discharge gap.

4,608,811

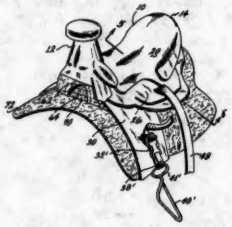
TOY SADDLE ADAPTED TO BE CARRIED BY AN ADULT PERSON

Frank J. Echeverri, 6422 Gentry Ave., North Hollywood, Calif. 91606

Filed Nov. 27, 1984, Ser. No. 675,412
Int. Cl.[4] B68C *1/02*
U.S. Cl. 54—44 **4 Claims**

1. As an article of manufacture, a miniaturized toy saddle having a size and a contour to be mounted on the back of an adult person and to carry a young child in the saddle, comprising in combination means contoured to provide a seat on the saddle for a young child to be seated astride the saddle, the underside of the seat part of the saddle being formed and contoured to include a flat part adapted to rest on the back of an adult person, the flattened portion of the underside of the saddle having a lateral extent sufficient to accommodate the back of a person in a hands and knees position and having contoured side parts to conform to the back of an adult person, strap means for attaching the saddle to the torso of an adult

person, and adjustably attached stirrups carried by the saddle to accommodate the child's feet said saddle being formed of plastic having flexible depending side wing portions depending from the sides, and foam plastic padding material disposed



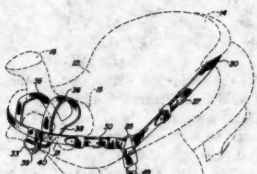
horizontally underneath the seat part of the saddle, said padding material being separate from and substantially underlying only said seat part, the said plastic foam padding material being contoured to provide a generally flat padded part to fit against the back of the adult person.

4,608,812

YOUTH STIRRUP ACCESSORY

Edwin G. Willson, Star Route #2, Box 236, Cave Creek, Ariz. 85331

Filed May 13, 1985, Ser. No. 733,041
Int. Cl.[4] B68C *1/16*
U.S. Cl. 54—44 **13 Claims**



1. An auxiliary stirrup assembly for use with a saddle having a seat, cantle, and pommel, including in combination:

strap means encircling the seat of the saddle and attached between the pommel and the cantle of the saddle;

attaching means for attaching said strap means to the pommel of the saddle, said attaching means securing said strap means against side-to-side shifting of said strap means with respect to the seat of said saddle, and said strap means extending behind the cantle of the saddle to thereby secure said strap means against front-to-rear shifting thereof and;

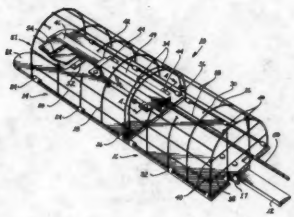
means for attaching an auxiliary stirrup to said strap means on each side of the seat of the saddle so that a child may sit on such seat and use said auxiliary stirrups.

4,608,813

APPARATUS WITH AN ADJUSTABLE CONTAINER FOR PICKING FRUIT

Sam J. Giallanza, 8207 E. Coolidge, Scottsdale, Ariz. 85251

Filed Feb. 19, 1985, Ser. No. 703,104
Int. Cl.[4] A01D *46/24*
U.S. Cl. 56—338 **3 Claims**



1. An apparatus for picking fruit, comprising:

an elongated pole;

an upper portion removably attached to said elongated pole including: (a) an upper mounting sheet having guide channel groove means having a first blade attached to said upper mounting sheet at the bottom of said guide channel groove means for guiding, positioning and cutting a stem of a piece of fruit to be picked, (b) guide arm means operably coupled to said upper mounting sheet for cutting said stem, said guide arm means includes: (i) a guide arm, (ii) a second blade attached to said guide arm, (iii) at least one positioning guide attached to said upper mounting sheet and (iv) cord means attached to said guide arm for moving said guide arm from an upper position to a lower cutting position so that said stem will be cut, said guide arm slidably engaging said at least one positioning guide, (c) an upper container made of wire attached to said upper mounting sheet, (d) spring means attached to said guide arm and said at least one positioning guide for returning said guide arm means to said upper position, and (e) a protective shield coupled to said at least one positioning guide; and

a lower portion removably attached to said upper portion and said elongated pole including: (a) a lower mounting sheet, (b) a lower container made out of wire attached to said lower mounting sheet, and (c) a bottom portion removably attached to said lower container.

4,608,814

METHOD AND APPARATUS FOR PRODUCING AN AIR TEXTURIZED YARN

George F. Moore, Jr., Charlotte, N.C., and Eberhard Krenzer, Ennepetal-Rüggeberg, Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

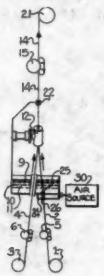
Filed Sep. 14, 1984, Ser. No. 650,829
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1983, 3345336; Dec. 15, 1983, 8335961; Feb. 4, 1984, 3403924
Int. Cl.[4] D02G *3/36, 1/16;* D02J *1/08*
U.S. Cl. 57—7 **16 Claims**

1. A method of producing a synthetic continuous multifilament yarn having desirable bulk and hand characteristics, and comprising the steps of

advancing each of at least two continuous multifilament yarn components along respective paths of travel extending between yarn feeding means and a common air jet nozzle, with a first one of said yarn components being advanced at a faster speed than that of a second one of said yarn components,

moistening the advancing slower yarn component as it advances along its path of travel by passing the same upwardly through a small opening in the bottom of a liquid

filled tank and upwardly completely through the liquid in the tank, while the faster yarn component remains free of contact with the moisture, and



feeding the advancing yarn components concurrently through the air jet nozzle while subjecting the same to a high velocity air jet to form loops, coils, bows or the like in the filaments thereof and produce a unitary bulked yarn.

4,608,815

COMPRESSED-AIR THREAD SPLICING DEVICE

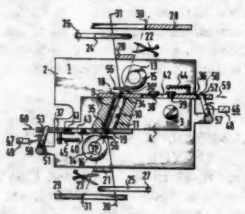
Joachim Rohner; Reinhard Mauries, and Heinz Zumfeld, all of Monchen-Gladbach, Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Nov. 26, 1984, Ser. No. 674,606

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1983, 3342858

Int. Cl.⁴ D01H *15/00*

U.S. Cl. 57—22 **12 Claims**



1. Compressed-air thread splicing device for producing a knotless thread connection by splicing, the device having a splicing channel for receiving therein threads to be spliced to one another, the splicing channel being formed with at least one compressed-air injection opening and affording at least one of a plurality of operations to be performed on the fibers of the threads consisting of tangling, hooking, whirling and entwining the thread fibers mutually, comprising first means for forming a thread guide contour edge at one end of the splicing channel, and second means for forming a thread guide contour edge at the other end of the splicing channel, said thread guide contour edges partly covering a respective outlet and inlet of the splicing channel, and controllable means for holding at least end fibers of ends of the threads in friction contact with at least one of the thread guiding contour edges during the splicing operation.

4,608,816

DEVICE FOR DOSING AND INJECTING A SMALL QUANTITY OF LIQUID INTO THE SPLICING AIR OF A PNEUMATIC YARN SPLICING DEVICE

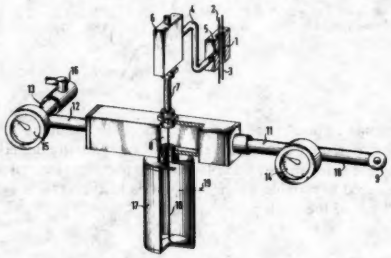
Josef Bertrams, Wegberg, and Edmund Wey, Nettetal, both of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Jun. 29, 1984, Ser. No. 626,408

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1983, 3323892

Int. Cl.⁴ D01H *15/00*

U.S. Cl. 57—22 **2 Claims**



1. Device for dosing and injecting a small quantity of liquid into the splicing air leading to an aperture in the splicing chamber of a pneumatic yarn splicing device, comprising a compressed-air pipe connected to the aperture in the splicing chamber, a container connected to said compressed air-pipe, a humidification tube being partially disposed in said compressed-air pipe and having an inlet in said container and an outlet above said inlet in said compressed-air pipe, a liquid disposed in said container up to a liquid level below said outlet of said humidification tube, and a check valve connected to said inlet of said humidification tube.

4,608,817

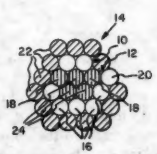
SINGLE STRAND METAL CORD AND METHOD OF MAKING

Dennis R. Brandyberry, Canton, and Kenneth M. Kot, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 612,514, May 21, 1984, abandoned. This application May 3, 1985, Ser. No. 728,683

Int. Cl.⁴ D07B *3/00, 1/06*

U.S. Cl. 57—213 **26 Claims**



1. A metallic cord for reinforcing elastomers having single filaments of similar diameter, lay length and lay direction comprising: a plurality of filaments laid on a core of two or more filaments which core filaments are twisted about each other, at least one filament in the core being in a layer of filaments formed by it and the plurality of filaments, the layer of filaments enclosing the remainder of core filaments.

4,608,818

MEDIUM-LOAD POWER-GENERATING PLANT WITH INTEGRATED COAL GASIFICATION PLANT

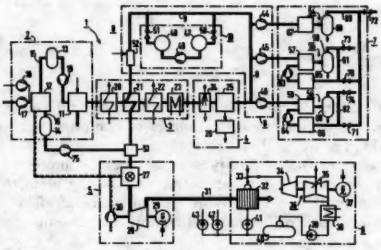
Konrad Goebel; Rainer Müller, both of Erlangen, and Ulrich Schiffers, Eckental, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim/Ruhr, Fed. Rep. of Germany

Filed May 25, 1984, Ser. No. 614,470

Claims priority, application Fed. Rep. of Germany, May 31, 1983, 3319732

Int. Cl.[4] F02C 3/28

U.S. Cl. 60—39.12 16 Claims



1. A medium-load power generating plant with an integrated coal gasification plant comprising

(a) a coal gasification plant for producing raw hot fuel gas-containing carbon monoxide and hydrogen,

(b) a raw gas heat exchanger installation having a first raw gas heat exchanger for indirect heat exchange between the hot raw gas from the coal gasification plant with feedwater to generate steam,

(c) a gas purifier for purifying the raw gas,

(d) a central purified gas distribution system,

(e) a purified gas supply line connected to the raw gas heat exchanger installation and passing into the central purified gas distribution system,

(f) a purified gas continuous-flow interim storage plant connected parallel to the purified gas supply line, wherein the purified gas continuous-flow interim storage plant contains a low-pressure accumulator connected via a charging valve to the purified gas supply line and a high-pressure accumulator connected via a discharge valve to the purified gas supply line, which accumulators are connected to each other via a pressure-increasing compressor for keeping the pressure in the pure-gas supply line constant, as a control and interim storage plant

(g) a gas turbine power generating plant connected to the coal gasification plant to receive fuel via the purified gas supply line,

(h) a steam power generating plant having a waste heat boiler for generating steam connected to an exhaust line from the gas turbine of the gas turbine power generating plant, a steam turbine connected to the waste heat boiler to receive steam to drive the steam turbine, a generator coupled with the steam turbine to generate electricity, and a condenser, pump and tank for recirculating steam condensate from the steam turbine to the waste heat boiler,

(i) a methanol synthesis plant having parallel-connected modules for converting CO and H_2 into methanol connected to the gas turbine power generating plant via the central purified gas distribution system.

4,608,819

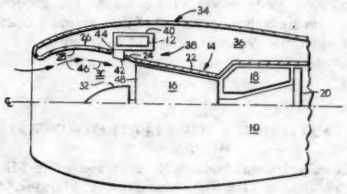
GAS TURBINE ENGINE COMPONENT COOLING SYSTEM

Michael E. Colman, Wakefield, and Robert E. Goeller, Beverly, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Dec. 27, 1983, Ser. No. 565,942

Int. Cl.[4] F02C 7/18

U.S. Cl. 60—39.83 35 Claims



1. In a gas turbine engine including a compressor supported in an annular frame, said frame having a front frame portion extending upstream of said compressor, said front frame having radially inner and outer surfaces, said inner surface defining a flowpath to said compressor, a system for cooling an engine component comprising:

said front frame including an aperture extending therethrough;

a housing for mounting said engine component therein, including a plurality of heat transfer fins extending outwardly therefrom; and

said housing being mounted to said radially outer surface of said front frame so that said heat transfer fins extend through said aperture and into said flowpath.

4,608,820

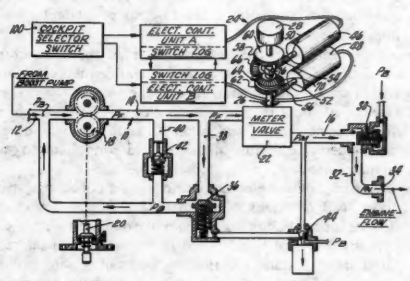
DUAL STEPPER MOTOR ACTUATOR FOR FUEL METERING VALVE

Albert H. White, Wethersfield; Robert E. Peck, Prospect; Gene A. Meyer, W. Simsbury, and Raymond H. Devanney, Winsted, all of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

Filed May 3, 1985, Ser. No. 730,000

Int. Cl.[4] F02C 9/46

U.S. Cl. 60—39.281 4 Claims



1. In an engine fuel control of the type having: a fuel metering valve; a first stepper motor; means, comprising a differential mechanism, operatively interconnecting the fuel metering valve and the first stepper motor for positioning the fuel metering valve in response to operation of the first stepper motor; an electronic control unit adapted to sense a plurality of engine parameters operatively connected to the first stepper motor for controlling the first stepper motor; a second stepper motor

operatively connected to the differential mechanism such that operation of the second stepper motor functions to position operating; and means to control the second stepper motor, the improvement comprising:

the second stepper motor control means comprising another electronic control unit adapted to sense a plurality of engine parameters operatively connected to the second stepper motor for controlling the second stepper motor; and the improvement further comprising:

a manually operable motor connected to the differential mechanism such that operation of the manually operable motor functions to position the fuel metering valve when both of the stepper motors are not operating.

4,608,821

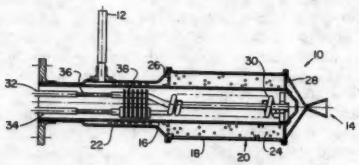
HEAT EXCHANGER FOR ELECTROTHERMAL DEVICES

Ralph J. Zavesky, Parma; James S. Sovey, Strongsville; Michael J. Mirtich, North Olmsted; Charalampus Marinos, Middleburg Hts., and Paul F. Penko, Berea, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 31, 1984, Ser. No. 636,463

Int. Cl.[4] H05B 7/00

U.S. Cl. 60—203.1 **6 Claims**



1. A heat exchanger for heating a gaseous propellant to a temperature between about 200° C. and about 2200° C. in an electrothermal thruster having a nozzle comprising

a hollow housing forming a cylindrical chamber adjacent to said nozzle, said hollow housing having a textured inner surface to provide high absorptivity and an oppositely disposed textured outer surface to provide high emissivity,

an outer housing surrounding said cylindrical chamber in spaced relationship thereto thereby forming an annular chamber for conducting said gaseous propellant to said nozzle,

a porous heat exchanger material selected from the group consisting of refractories, ceramics, and cermets contained within said annular chamber, housing

a wire coiled about the outer surface of said hollow housing in engagement with said outer housing for providing a lengthened spiral flow path for said propellant to said annular chamber,

an electrical heating element comprising a coiled tube having a wall thickness of about 0.25 mm and a textured surface for providing high emissivity mounted within said cylindrical chamber in spaced relationship with said textured inner surface for radiatively heating said hollow housing and heat exchanger material without contacting said gaseous propellant,

means for supplying a gaseous propellant to said lengthened spiral flow path and seal annular chamber whereby said propellant is uniformly heated by said hollow housing and said porous heat exchanger material as it flows therethrough in a minimum gas path length, and

a thermal choke formed in said electrical heating element adjacent to said coiled wire for reducing conducted thermal energy.

4,608,822

SYSTEM FOR CONTROLLING THE VALVES OF A TURBO JET SHAFT ENGINE NOZZLE

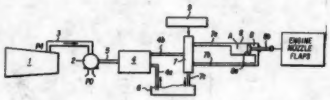
Jean-Luc Fondacci, Montgeron, and Yves-Marie M. R. Francois, Dammarie Les Lys, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A., Paris, France

Continuation of Ser. No. 557,393, Dec. 2, 1983, abandoned, which is a continuation of Ser. No. 307,444, Oct. 1, 1981, abandoned. This application Mar. 11, 1985, Ser. No. 709,364

Claims priority, application France, Oct. 1, 1980, 80 21004

Int. Cl.[4] F02K 1/12, 1/15

U.S. Cl. 60—242 **3 Claims**



1. A system for controlling exhaust flaps of a turbine engine nozzle, said engine having a compressor compressing air to a variable pressure, said system comprising:

constant capacity, positive displacement compressed air motor means having an output and having input means communicating only with high pressure air from said compressor for driving said compressed air motor means at a variable speed;

constant capacity, positive displacement pump means having an output and being driven by said output of said compressed air motor means, a pressure of said pump output being proportional to said compressed air motor means input;

a distributor having outlet means and having an inlet connected to said output of said pump means; and

hydraulic jack means fed by said outlet means of said distributor, said hydraulic jack means including means for actuating said exhaust flaps of said turbine engine nozzle;

whereby a pressure of said output of said pump is proportional to a pressure of said high pressure air, wherein the delivery of the positive displacement pump means is always proportional to the delivery of air going through the constant capacity, positive displacement compressed air motor means,

whereby when said exhaust flaps do not require delivery from said pump, said pump means stops at the same time as said motor means, thus cancelling delivery of said high pressure air,

so that the pressure at said outlet means of said pump means is then proportional to the air pressure at the intake of the compressed air motor means,

whereby the energy expended to control said flaps is always exactly suited to the needs thereof under all operating conditions.

4,608,823

SPRAGLESS TORQUE CONVERTER APPARATUS AND METHOD

Robert E. Maze, 823 Crum Creek Rd., Springfield, Pa. 19064

Continuation of Ser. No. 491,603, May 4, 1983, abandoned. This application Jul. 5, 1985, Ser. No. 752,002

Int. Cl.[4] F16D 33/00

U.S. Cl. 60—361 **4 Claims**

1. In a hydraulic torque converter adapted to couple the engine output to the transmission input of an automotive vehicle

said converter having a turbine, a stator and an impeller disposed successively along a common axis, and including a stationary member,

said turbine being adapted to cause hydraulic fluid to move toward said impeller in a first direction when the pressure

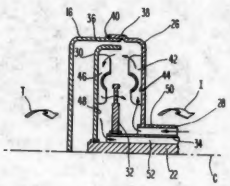
of hydraulic fluid leaving said impeller is insufficient to rotate said turbine and in a second direction when the pressure of hydraulic fluid leaving said impeller is sufficient to rotate said turbine,

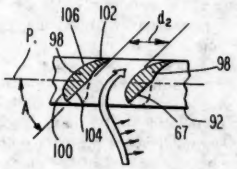
said stator including a plurality of vanes adapted to direct hydraulic fluid in its passage said turbine toward said impeller,

said vanes having leading and trailing edges and a pair of opposite surfaces extending from said leading edge to said trailing edge, one of said surfaces being convex and the other of said surfaces being concave,

said concave surface facing said first hydraulic fluid direction and both of said surfaces being generally parallel to said second hydraulic fluid direction,

the improvement wherein





said stator is connected to said stationary member, wherein said stator is fixed against rotation and

said concave surface includes a substantially flat portion extending from said leading edge and extending toward said trailing edge, said portion forming an angle with a radial plane therethrough, as seen in circumferential cross-section, of 45° to 65°,

wherein the flat portion extends from the leading edge of the vane, toward the trailing edge of the vane, with the downstream end of the flat portion being immediately adjacent the remainder of the concave surface,

wherein the flat portion permits substantially unrestricted flow of fluid in said second direction, and wherein the vane is substantially free of any extended flat surfaces generally normal to the flow of fluid in said second direction.

4,608,824

HYDRAULIC MOTOR FOR CARS

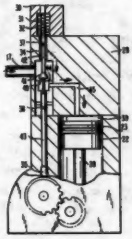
David C. Gagnon, 227 Whipple St., Fall River, Mass. 02721

Continuation-in-part of Ser. No. 289,795, Aug. 3, 1981, abandoned. This application Jul. 9, 1984, Ser. No. 628,803

Int. Cl.[4] F16D *31/02*

U.S. Cl. 60—325 **1 Claim**

1. A hydraulic motor for a car, comprising, in combination, an automotive vehicle engine for travel self-propulsion, including a block, a plurality of cylinders in said block, a piston slidable in each said cylinder, a crankshaft in said block, a piston rod connected between said crankshaft and each said piston, a power take-off gear on said crankshaft for said travel self-propulsion, and said engine including a hydraulic means for driving said pistons in said cylinders, wherein said hydraulic means comprises a head bolted upon said block, a first hydraulic system inside said head to urge said pistons in one direction and a second hydraulic system inside said head to urge said pistons oppositely, a camshaft suported in said block, a gear on said camshaft driven by said crankshaft take-off gear, a first set of cams and a second set of cams along said camshaft, a pair of said first and second said set cam driving each said piston, and each said first and second hydraulic systems comprising a cam-following lifter resting upon one said cam, a valve push rod bearing at one end against each said cam and having an opposite end bearing against a compression spring, a conical valve affixed along said push rod and located inside a



chamber inside said head, said chambers of said first system intercepting a passage between a hydraulic fluid entry port on said block and said cylinder, said chambers of said second system intercepting a passage between said cylinder and a hydraulic fluid exhaust port on said block; and further a hydraulic means between all said exhaust ports and all said entry ports comprising branch lines from said exhaust ports to a hydraulic oil reservoir tank, a line between said tank and an electrically powered pump, and branch lines between said pump and all said entry ports.

4,608,825

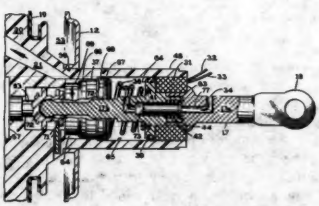
AUTOMATIC BRAKE ACTUATOR WITH CONTROLLED RELEASE

William G. Fontaine, Pompano Beach, Fla., assignor to Fail Safe Brake Corporation, Ft. Lauderdale, Fla.

Filed Oct. 7, 1983, Ser. No. 540,060

Int. Cl.[4] F15B *7/00;* **B60K** *28/00*

U.S. Cl. 60—545 **6 Claims**



1. In a brake system for a motor vehicle having a brake, said brake system comprising:

a brake pedal operable in one direction to apply the brake;

a reciprocable brake shaft operated by said brake pedal;

a vacuum operated booster for said brake comprising a housing having a variable pressure chamber therein, a movable wall extending transversely across the interior of said housing on one side of said variable pressure chamber, and means for connecting said variable pressure chamber to a source of vacuum, said movable wall having an annular extension on the opposite side from said variable pressure chamber slidably supported on said housing and receiving said brake shaft reciprocably, and said movable wall having an air passageway providing fluid com-

munication between said variable pressure chamber on said one side of the movable wall and the interior of said annular extension on the opposite side;

and flow restriction means on said brake shaft inside said annular extension for restricting the flow of air from the interior of said annular extension into said air passageway in said movable wall upon displacement of the brake shaft by the brake pedal toward said movable wall;

the improvement wherein:

said brake shaft has a passageway therein for providing fluid communication between the interior of said annular extension and the atmosphere, said brake shaft passageway defining a valve seat;

a magnetic valve member in said brake shaft passageway engageable with said valve seat to block fluid communication between the interior of said annular extension and the atmosphere;

spring means biaaing said valve member into engagement with said valve seat;

and a solenoid coil inductively coupled to said valve member for unseating said valve member from said seat in response to energization of the coil, whereby to connect said variable pressure chamber to the atmosphere through said air passageway in said movable wall and said annular extension.

4,608,826

MASTER CYLINDER CONSTRUCTIONS

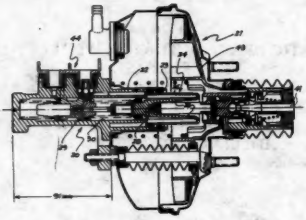
Patrick F. Sawyer, Heathcote, Australia, assignor to Girlock Limited, Belmore, Australia

Continuation of Ser. No. 495,537, May 17, 1983, abandoned. This application May 15, 1985, Ser. No. 734,765

Claims priority, application Australia, May 18, 1982, 4054/82

Int. Cl.⁴ B60T *13/00*

U.S. Cl. 60—547.1 **3 Claims**



1. In a master cylinder assembly for use with a servo mechanism including a servo piston travelling therein, said master cylinder assembly including primary, secondary and fast-fill pistons arranged in tandem, and the fast-fill piston moving in a bore of larger diameter than that of the primary and secondary pistons, the improvement wherein the fast-fill piston is of hollow annular construction comprising an inner cylindrical wall and an outer cylindrical wall joined together at one end and defining between them an annular space open at the other end, the outer surface of the outer wall being arranged to stroke past sealing means into an annular cavity at one end of the master cylinder surrounding part of the bore of the primary piston of the master cylinder and to displace fluid therefrom, said sealing means being located adjacent to said one end of the master cylinder such that, when the fast-fill piston is extended, it projects beyond said annular cavity, and an inner surface of the outer wall which is spaced from the inner wall of the annular cavity to define a passage through which said displaced fluid flows, the inner wall of the fast-fill piston forming part of the primary piston and being arranged to move simultaneously within said part of the bore and to displace fluid therefrom to initiate movement of the secondary piston, and the master cylinder assembly being adapted to be mounted on said servo mechanism with the projection of the fast-fill piston beyond the annular cavity occupying a space in the path of travel of said servo piston.

4,608,827

COOLING SYSTEM OF AN INTERNAL COMBUSTION ENGINE HAVING A TURBO-CHARGER

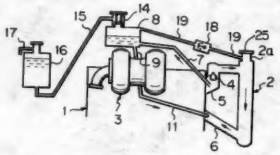
Mitsuru Hasegawa, and Tamotsu Fukuda, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Apr. 3, 1985, Ser. No. 719,552

Claims priority, application Japan, Apr. 13, 1984, 59-73025

Int. Cl.⁴ F02B *33/44*

U.S. Cl. 60—605 **11 Claims**



1. A cooling system of an internal combustion engine having a turbo-charger, comprising a cooling water circulation passageway filled with cooling water for cooling the engine including at least a cylinder head cooling portion, a cooling water circulation passageway for cooling the turbo-charger including a turbo-charger cooling portion, and means for supplying a part of the engine cooling water to the turbo-charger cooling water circulation passageway and returning it from there to the engine cooling water circulation passageway, characterized in that the turbo-charger cooling portion is positioned at the same level or higher than the cylinder head cooling portion of the engine, the turbo-charger cooling water circulation passageway includes a water volume positioned at a level higher than said turbo-charger cooling portion, and said volume is connected to a cooling water reservoir tank via a pressure relief valve which is opened when pressure in said volume exceeds a predetermined value to supply cooling water to said volume.

4,608,828

SUPERCHARGED FOUR-STROKE ENGINE WITH SINGLY VALVED CYLINDERS AND PASS-AROUND OF COMPRESSED AIR

Thomas I. Mikota, Friedberg, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 593,361

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1983, 3311626

Int. Cl.⁴ F02B *37/00*

U.S. Cl. 60—606 **14 Claims**

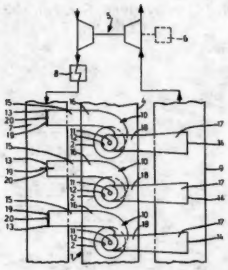
1. Four-stroke multicylinder supercharged internal combustion engine with a supercharger driven at least in part by engine exhaust gas, having an air-charging manifold connected for supplying air from said supercharger to the engine cylinders for combustion of fuel injected therein, an exhaust gas collecting manifold connected to said cylinders and to said supercharger, and ducts interconnecting said manifolds and valved ports of said cylinders,

said ducts being so constituted that for each cylinder (2) there is provided a blow-around duct connected at one end to said air-charging manifold and at its other end to said exhaust manifold, having curved portions respectively leading to and leading away from a port of said cylinder, passing through a cylinder-head structure (4) and connecting to a short gas-change channel (12) which

branches off said blow-around duct and connects to said port,

a single gas-changing valve (11) being provided at said port in said gas-change channel (12) for said cylinder, through which valve and channel the air necessary for combustion in said cylinder can be charged into said cylinder and the gases to be exhausted can be propelled out of said cylinder,

said blow-around duct (10, 13, 14, 15, 16, 17, 18) being so shaped that, for increase of the effective working gas quantity in said supercharger, an appreciable amount of air can be blown from said air-charge manifold, around said said curved duct portions in succession, to said exhaust gas manifold against a resistance to air flow through and between said curved portions such that when said valve (11) is closed, a limited amount of air can pass, as a result of pressure difference between said manifolds, from said air-charge manifold (7) to said exhaust manifold (9),



said blow-around duct and said gas-exchange channel being also shaped so that, when said valve (11) is open, charging air can flow from said air-charging manifold into said cylinder with little resistance to flow during the intake stroke of a piston in said cylinder and exhaust gas can flow out of said cylinder into said exhaust manifold with little resistance to flow during the exhaust stroke of said pistin,

controllable throttle means (19) being provided in each said blow-around duct at or near its inlet end, said throttle means being in each case capable of being operated to vary the local cross section of said blow-around duct between full and minimum passage cross section, and

timed operating means being provided for said throttle means, comprising timing (21) and actuating means (22, 23) for said throttle means (19) for opening and closing the respective blow-around ducts in accordance with the piston stroke cycle of the respective cylinders.

4,608,829

WASTE HEAT RECOVERING DEVICE

Akira Horiguchi, and Hiroyuki Sumitomo, both of Osaka, Japan, assignors to Hisaka Works, Ltd., Osaka, Japan

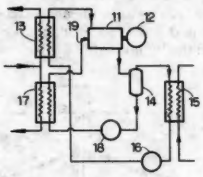
Filed Jan. 4, 1985, Ser. No. 688,941

Claims priority, application Japan, Jan. 5, 1984, 59-447; Sep. 26, 1984, 59-200879

Int. Cl.⁴ F01K *27/00*

U.S. Cl. 60—643 **2 Claims**

1. A heat recovering device comprising an oil injection type screw expander having its output shaft connected to a load, an evaporator using waste heat as a heat source to evaporate a working medium so as to produce working medium vapor to be fed to said expander, a condenser for condensing the working medium vapor discharged from said expander, a working medium circulating pump for circulating the working medium within a system comprised of said condenser, evaporator and expander, an oil circulating pump for feeding oil to said expander, and a heater for heating the oil to be fed to the expander to a higher temperature than the working medium vapor temperature, said device being characterized in that the working medium vapor and heated oil to be fed to the expander are



brought into direct contact with each other in the suction port of the expander.

4,608,830

METHOD AND APPARATUS FOR THE AUTOMATIC REFILLING OF A LIQUID HYDROGEN TANK IN A MOTOR VEHICLE

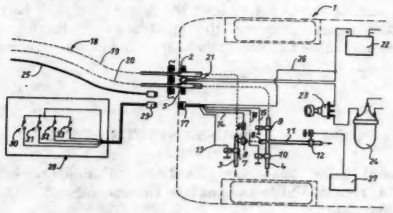
Walter Peschka, Sindelfingen; Gottfried Schneider, and Willi Nieratschker, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt e.V., Bonn, Fed. Rep. of Germany

Filed Nov. 29, 1984, Ser. No. 676,001

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1983, 3344770

Int. Cl.⁴ F25B *7/00*

U.S. Cl. 62—7 **9 Claims**



1. Method for the automatic refilling of a liquid hydrogen tank on a motor vehicle in which the tank is connnected to a liquid hydrogen supply line as well as a hydrogen gas return line, comprising:

connecting the liquid hydrogen supply line in the vehicle to the hydrogen gas return line,

passing liquid hydrogen through said lines in order to cool them,

connecting the liquid hydrogen supply line to the liquid hydrogen tank only after said lines have been cooled, and

commencing to refill the liquid hydrogen tank.

4,608,831

SELF-PRESSURIZING CONTAINER FOR CRYOGENIC FLUIDS

Keith W. Gustafson, Station 1101, Lake Arrowhead, Waleska, Ga. 30183

Filed Oct. 24, 1984, Ser. No. 664,285

Int. Cl.⁴ F17C *7/02*

U.S. Cl. 62—55 **7 Claims**

1. A self-pressurizing container for a cryogenic fluid existing as a liquid with its vapor phase disposed above the liquid, the container comprising:

(a) an outer vessel;

(b) an inner vessel for containing the cryogenic fluid;

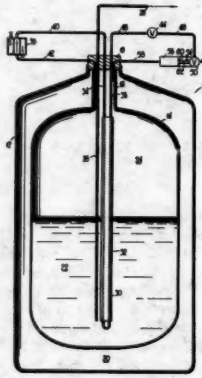
(c) an insulating space between the vessels;

(d) a sealable access port connected to the inner vessel to

provide sealed access from outside the outer vessel to inside of the inner vessel;

(e) a transfer tube extending from outside the outer vessel through the access port into the cryogenic liquid;

(f) open-ended barrier tube means extending between the cryogenic liquid and its vapor phase for conducting vapor formed from the liquid within the barrier tube to the vapor



phase above the liquid in the inner vessel to pressurize the inner vessel and for insulating the liquid inside the barrier tube means from that liquid outside the barrier tube means;

(g) heating means for heating the liquid inside the barrier tube means to vaporize the liquid inside the barrier tube means without substantially heating the liquid outside the barrier tube means.

4,608,832

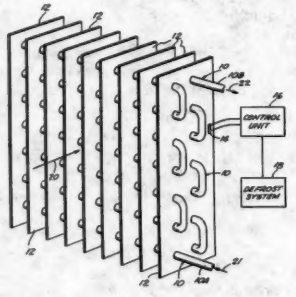
MEANS AND TECHNIQUES USEFUL IN DETECTING FROST

Cullen M. Sabin, Solana Beach, and Heinz F. Poppendiek, La Jolla, both of Calif., assignors to Geoscience, Ltd., Solana Beach, Calif.

Continuation-in-part of Ser. No. 565,413, Dec. 27, 1983, abandoned, which is a continuation of Ser. No. 350,224, Feb. 19, 1982, abandoned. This application Mar. 20, 1985, Ser. No. 714,191

Int. Cl.[4] F25D *21/02*

U.S. Cl. 62—140 **6 Claims**



1. In a heat exchange system wherein moisture in ambient cooling air produces frost on a heat exchanger through which refrigerent flows and impairs the transfer of heat from said exchanger, heat flow sensing means including a pair of temperature sensing means being mounted externally of said heat exchanger in spatial relationship to each other and in heat conductive relationship to said exchanger to sensing the flow of heat from said exchanger and the impairment of said transfer and producing an output in accordance with said impairment, and means coupled to said sensing means and using said output for defrosting said exchanger.

4,608,833

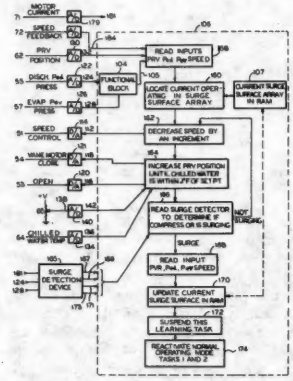
SELF-OPTIMIZING, CAPACITY CONTROL SYSTEM FOR INVERTER-DRIVEN CENTRIFUGAL COMPRESSOR BASED WATER CHILLERS

Kenneth J. Kountz, Palatine, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 24, 1984, Ser. No. 685,685

Int. Cl.[4] F25B *1/00*

U.S. Cl. 62—228.1 **12 Claims**


MOTOR CURRENT
SPEED FEEDBACK
PRV POSITION
DISCH. Pre PRESS
EVAP. Pre PRESS
SPEED CONTROL
VANE MODDLE CLOSE
OPEN
CHILLED WATER TEMP
SURGE DETECTION DEVICE
READ INPUTS PRV Pos Pwr SPEED
FUNCTIONAL BLOCK
LOCATE CURRENT OPERATING IN SURGE SURFACE ARRAY
CURRENT SURGE SURFACE ARRAY IN RAM
DECREASE SPEED BY AN INCREMENT
INCREASE PRV POSITION UNITIL CHILLED WATER IS WITHIN .1°F OF SETPT
READ SURGE DETECTOR TO DETERMINE IF COMPRESS OR IS SURGING
NOT SURGING
SURGE
READ INPUT PWR Pos, Pwr SPEED
UPDATE CURRENT SURGE SURFACE IN RAM
SUSPEND THIS LEARNING TASK
REACTIVATE NORMAL OPERATING MODE TASKS 1 AND 2

1. A self-optimizing, capacity control system for a refrigeration system, including a compressor, a condenser, and an evaporator, all connected in a closed refrigeration circuit, which compressor includes a plurality of adjustable inlet guide vanes, a motor connected to regulate the inlet guide vanes position, and an electrical variable speed motor connected to drive the compressor, said control system comprising:

means for sensing the absolute condenser pressure to generate a first signal;

means for sensing the absolute evaporator pressure to generate a second signal;

means for sensing the amplitude of the current flowing in the compressor drive motor to generate a third signal;

means for sensing the actual speed of the compressor drive motor to generate a fourth signal;

means for sensing the physical position of the inlet guide vanes to generate a fifth signal;

means for sensing the temperature of the chilled water discharged from the evaporator to generate a sixth signal;

means for sensing a temperature set point to generate a seventh signal; and

microprocessor means responsive to said first through seventh signals to generate control signals to regulate automatically both the speed of the compressor drive motor and the position of the inlet guide vanes based upon a continually updated "learned" chiller surge surface so as to realize a minimum overall chiller energy consumption.

4,608,834

AIR-CONDITIONING SYSTEM FOR VEHICLES

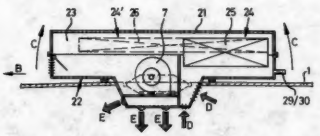
Wolfram Rummel, Muenchen, Fed. Rep. of Germany, assignor to Webasto-Werk W. Baier GmbH & Co., Fed. Rep. of Germany

Filed Mar. 26, 1985, Ser. No. 716,284

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1984, 3411053

Int. Cl.⁴ B60H *1/32*

U.S. Cl. 62—244 **22 Claims**



1. An air-conditioning system for retrofit installation in vehicles particularly those having a ventilation system with a roof opening, a hatch and a hinge assembly interconnected between the vehicle roof and the hatch for enabling the hatch to be movable between positions opening and closing the roof opening, the air-conditioning system comprising at least one blower, a receiving part within which the blower is mounted in a central area with a delivery side thereof in communication with air distribution means of the receiving part and wherein a circulating-air intake device in the receiving part is provided in a manner that is separated from the delivery side of the blower, said receiving part being constructed in a manner enabling direct substitution thereof for the hatch of the ventilation system without modification of the roof opening, the air-conditioning system, when installed in the vehicle, being hinged for movement, as a whole, between raised positions wherein the roof opening is at least partially exposed for direct ventilation of the vehicle interior and a lowered position closing the roof opening for treatment of air in the vehicle interior by the air-conditioning system.

4,608,835

CABINET FOR COOLING GOODS, ETC.

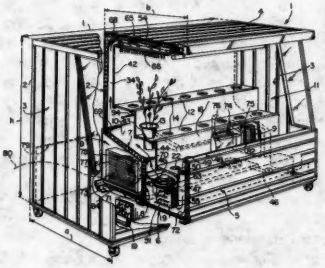
Hermen Kooy, P.O. Box 306, NL-1430 AH Aalsmeer, Netherlands

Continuation of Ser. No. 598,007, Apr. 9, 1984, abandoned. This application Jun. 3, 1985, Ser. No. 740,309

Claims priority, application Netherlands, Nov. 2, 1983, 8303771; Feb. 20, 1984, 8400536

Int. Cl.⁴ A47F *3/04*

U.S. Cl. 62—255 **22 Claims**



1. A showcase for refrigerated goods and which is of sufficiently little front to rear depth as to allow placement at the side of an aisle, which comprises:

an insulated wall having a vertically extending front wall portion terminating in an upper edge, a horizontally extending bottom wall portion projecting rearwardly from said front wall portion, a vertically extending first intermediate wall portion projecting upwardly from said bottom wall portion in rearwardly spaced relation to said front wall portion, a second intermediate wall portion extending rearwardly from said first intermediate wall portion adjacent the upper portion thereof, a rear wall portion extending upwardly from said second intermediate wall portion, a top wall portion extending forwardly from said rear wall portion and terminating in a forward edge, and side wall portions at the two sides of the showcase, each side wall portion having a front edge substantially commensurate with the height of said front wall portion and extending therefrom to the rear of the showcase with a height extending from said bottom wall portion to said top wall portion and defining in combination with the other wall portions an enclosure having an open front defined between said upper edge and said front edge through which goods may be viewed and made accessible to a potential purchaser;

a stepped platform assembly extending from generally adjacent said upper edge of the front wall portion to a region spaced forwardly from said rear wall portion, a rear partition extending upwardly from said platform assembly in closely spaced relation to said rear wall portion to define a channel therebetween leading upwardly from the space between said wall portions and said assembly, and air permeable means underlying said top wall portion and communicating with said channel for distributing air downwardly into said enclosure;

a refrigerant evaporator disposed above said bottom wall portion and extending substantially from one side wall portion to the other side wall portion, drain means passing through said frist intermediate wall portion to drain condensate caused by cooling due to said evaporator to pass through such intermediate wall portion to a point behind it, there being air inlet means adjacent said upper edge for admitting air from above said platform assembly into said space, and fan means for forcing air through said air inlet means past said evaporator and into said space to flow through said channel and said air permeable means;

a condensate tray disposed behind said first intermediate wall portion and into which said drain means discharges, said showcase having a rear closure wall extending downwardly from said rear wall portion and defining with said insulated wall portions an air tunnel extending end-to-end generally from one side wall portion to the other side wall portion and nested beneath the second intermediate wall portion which overlies it, said tunnel having ambient air inlet means adjacent one end thereof and moisture laden air outlet means adjacent the other end thereof;

a refrigerant condenser disposed above said tray adjacent said one end of the tunnel so that ambient air may pass thereover, fan means for inducting air into said air inlet means and causing it to flow through said tunnel and thence outwardly through said air outlet means, a refrigerant compressor disposed within said tunnel downstream of said condenser, and water absorbent means downstream of said compressor for absorbing condensate from said tray and exposing it for evaporation both in the lateral and the vertical directions of said tunnel.

4,608,836

MULTI-MODE OFF-PEAK STORAGE HEAT PUMP

Calvin D. MacCracken; Mark M. MacCracken, and Brian M. Silvetti, all of Englewood, N.J., assignors to Calmac Manufacturing Corporation, Englewood, N.J.

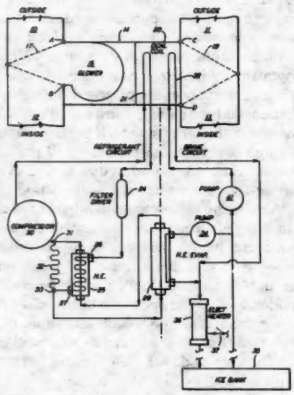
Filed Feb. 10, 1986, Ser. No. 828,242

Int. Cl.⁴ F25B *29/00*

U.S. Cl. 62—325 **7 Claims**

1. A multi-mode off-peak storage heat pump system for a building comprising

(a) ducts for conveying air within and between the inside and outside of the building;
(b) a single selectively operable blower in said ducts for circulating air therethrough;
(c) damper means in said ducts having selective settings for directing the air within and between the inside and outside of the building;
(d) selectively operable dual coil means in said ducts having refrigerant condensing and brine air-cooling loops;
(e) a selectively operable unidirectional refrigerant circuit comprising
(i) a compressor for directing gaseous refrigerant to the refrigerant loop to be air-cooled and condensed,
(ii) a heat exchanger-evaporator in which the condensed refrigerant from the refrigerant loop is evaporated to gas; and
(f) a selectively operable brine circuit comprising
(i) a coolness and low level heat storage container through which brine is circulatable in heat exchange relation with a phase-change material,
(ii) a selectively operable electric heater for warming the brine entering the storage container to melt the phase-change material, and
(iii) pump means for directing the brine leaving the storage container through one of a first subcircuit to the heat exchanger-evaporator for chilling of the brine to below the freezing temperature of the phase-change material and a second subcircuit to the coil means brine loop for cooling of air;
(g) whereby said system is operable in various alternative modes including operating the refrigerant and brine circuits and first brine subcircuit with an outside-to-outside damper setting to freeze the phase-change material with chilled brine and with an inside-to-inside damper setting to additionally heat inside air, and operating only the brine circuit and its second subcircuit with an inside-to-inside damper setting to cool inside air and with an outside-to-outside damper setting to melt the phase-change material by outside air heat and with no air circulation to melt the phase-change material by electric heat during offpeak loads, and operating neither circuit with an outside-to-inside damper setting to cool inside air and with an inside-to-outside damper setting to exhaust inside air.

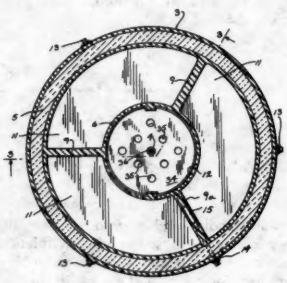


4,608,837

MULTI-COMPARTMENT JUG

Charles P. Hickey, 1904 - 27 St., and Dennis J. Oostdik, N4350 Skinner Hol. Rd., both of Monroe, Wis. 53566

Filed Nov. 25, 1985, Ser. No. 801,588
Int. Cl.[4] B67D 5/62
U.S. Cl. 62—400 8 Claims



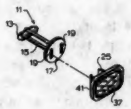
1. A multi-compartment jug comprising, in combination:
(a) a jug body having a bottom (2) and a peripheral side wall (3), said side wall defining a central jug axis (4),
(b) a tubular member (6) extending upwardly from said bottom and spaced radially inwardly of said side wall and generally coaxial therewith,
(c) a plurality of partitions (9) extending upwardly from said bottom and extending radially between said side wall and said tubular member, and with said partitions having upper edge portions extending between said side wall and said tubular member,
(d) said partitions, bottom, side wall and tubular member together forming a plurality of peripheral storage compartments (11),
(e) said tubular member forming a central storage compartment (12) for ice or the like,
(f) a lid (16) removably disposed on the upper end portions of said partitions,
(g) a cover (29) removably mounted to the upper end portion of said tubular member,
(h) said cover forming means to automatically lock said lids (16) in place over said peripheral compartments (11) when said cover is mounted to said tubular member,
(i) a lift member (33) disposed within said central storage compartment (12) and having:
(1) a plate (34) normally disposed on said bottom (2) and forming a false floor for receiving ice or the like thereon,
(2) and a lift handle (36) extending upwardly through said central storage compartment (12) from said plate (34) for raising said plate, together with said ice, axially upwardly for accessing the ice,
(j) means (35) associated with said plate for permitting melted ice water to remain in the bottom of said central storage compartment when said plate is lifted upwardly by said handle,
(k) a circumferential ring (39) disposed about said side wall (3),
(l) a carrying handle (37) for said jug and comprising a generally U-shaped member mounted to said ring for pivoting about a pivot axis (40),
(m) and means mounting said ring (39) for sliding movement about said side wall (3) so that said handle is rotatably adjustable relative to said peripheral compartments (11) to accommodate disproportionate loads occurring within said jug relative to said pivot axis.

4,608,838

JEWELRY WITH INTERCHANGEABLE FACE MEMBERS

Irving Gardner, P.O. Box 294, Hunter, N.Y. 12442

Filed May 6, 1985, Ser. No. 730,437
Int. Cl.[4] A44C *17/02*
U.S. Cl. 63—29 R **7 Claims**



1. A jewelry device incorporating means for interchanging a face member for a piece of jewelry comprising:

a face member for a piece of jewelry;

means for rigidly retaining said face member of a piece of jewelry including spring means having a pair of resilient prongs and a bezel with a surface area with an upstanding rim extending thereabout and said spring means including a flat plate located beneath the face member, said pair of resilient prongs being affixed to said flat plate and said surface area having a pair of slots therein through which said pair of resilient prongs extend,

a jewelry base member; and

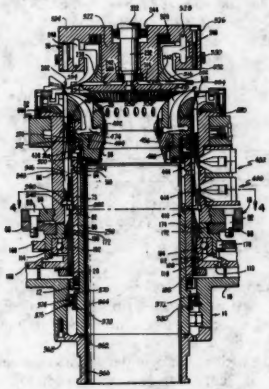
a mounting means rigidly secured to said jewelry base member including a platform with a pair of slots in it to receive the pair of prongs.

4,608,839

CIRCULAR WEFT KNITTING MACHINES

E. C. Tibbals, Jr., Rte. 2, Box 386, High Point, N.C. 27260

Filed Jul. 14, 1982, Ser. No. 398,303
Int. Cl.[4] D04B *15/78*
U.S. Cl. 66—13 **14 Claims**



1. In the weft knitting of articles, the steps of

(a) lineally, sequentially and individually displacing a multiplicity of identically configured needle assembly means toward and away from a yarn feed location; said needle assembly means each having one hooked yarn engaging end and at least one transversely extending butt portion remote therefrom;

(b) transmitting a preprogrammed electrical signal for each such needle assembly means indicative of a desired knit, tuck, or float operation to be performed by each such needle assembly means when displaced at the yarn feed location;

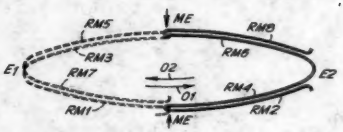
(c) selectively displacing said extending butt portion of said needle assembly means in response to said transmitted signal into driving engagement with a selected one of a plurality of continuously extending, closed butt portion confining displacement path controlling cam track means to effect controlled zero or constant accelerative displacement of each such needle assembly means between points at which the accelerative displacement changes from said zero to said constant accelerative displacement or from said constant to said zero accelerative displacement as it is moved toward and away from said yarn feed location to permit each such needle assembly means to reliably knit, tuck, or float at high speeds in accord with said preprogrammed instruction.

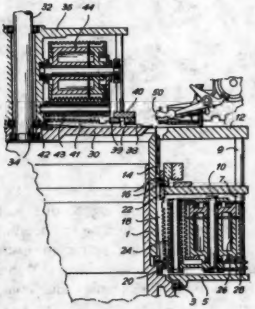
4,608,840

METHOD AND MACHINE FOR KNITTING GARMENTS HAVING LEGS AND A BODY PORTION

Ivan Riccitelli, Viareggio, Italy, assignor to Paolo Conti and Meritex S.r.l., Italy

Filed Sep. 17, 1984, Ser. No. 651,605
Claims priority, application Italy, Sep. 20, 1983, 9518 A/83
Int. Cl.[4] D04B *9/20*
U.S. Cl. 66—30 **9 Claims**





1. In a circular knitting machine for making garments, such as pairs of tights, each garment constituted by a body having a front portion and a rear portion, and by two tubular legs, the machine having a needle cylinder capable of alternating rotational motion, a system for controlling the needles and a plate coaxial with the cylinder and rotatable with it, the improvement whereby the needle cylinder has a number of needles, arranged in arcuate groups, at least equal to that which is necessary for making one of the two portions of the body of each of a plurality of the garments, a plate with the same number of needles running along radial channels and formed in the said areas; said cylinder and said plate being movable with a synchronous reciprocating motion over an angle of arc at

least equal to the arc occupied by the groups of needles intended to form one half of said front or rear portions; and a plurality of stationary thread guides distributed around the cylinder to supply to the needles of the cylinder and of the plate two threads for each said garment, for forming the two legs and the body of the garment; and whereby the said control system comprises first stationarily located control means for the cylinder needles for forming the knitted garment and for the progressive insertion of different numbers of the cylinder needles in different strokes of the cylinder and plate, the first control means facing the needle arcs for each leg, and second stationarily located control means for the needles of the plate for forming the knitted garment and for the progressive insertion of corresponding different numbers of the plate needles in the said different strokes; the first control means being actuable to form the garment during each stroke in one direction with only the needles of the cylinder, and the second control means being actuable to form the garment during each stroke in the reverse direction with only the needles of the plate, progressively to form with each thread each of the legs and then to form with the two threads the corresponding areas of the front and rear portions of the body.

4,608,841

KNITTING MACHINE HAVING A NEEDLE BED

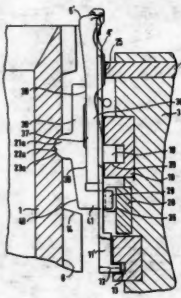
Alfred Buck, Rottenburg, and Falk Kühn, Kiebingen, both of Fed. Rep. of Germany, assignors to Memminger GmbH, Freudenstradt, Fed. Rep. of Germany

Filed Jul. 26, 1984, Ser. No. 634,789

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1983, 3330530

Int. Cl.[4] D04B *15/06*

U.S. Cl. 66—104 **5 Claims**



1. Knitting machine having a needle bed (**1**);

a plurality of needles (**4**) having needle shafts (**11**), needle butts (**12**) and hooks, located on the needle bed and movable between projected and retracted positions;

a needle cam box (**3**) having cam races (**13**) therein, engaging the needle butts of the needles and controlling needle movement;

combined hold-down and knock-over sinkers (**5'**), each having sinker butts (**18**) located between the needles and slidably movable between projected and retracted positions, and additionally movable in a rocking movement about an axis transverse to said sliding movement;

and sinker cam means (**19**) having

first sinker cam races (**20**) engaging the sinker butts (**18**) to control said sliding movement, and second (**25**) and third cam races (**26**), selectively engaging the sinkers to control said rocking movement thereof,

and wherein

the sinker cam means are located to position the first, second and third sinker cam races (**20, 25, 26**) between the needle butt and the needle hook, and above the needle cam race (**13**);

the sinker cam means being further located to position the first sinker cam race (**20**), engaging the sinker butts (**8**) between, and spaced from the second and third sinker cam races (**25, 26**), to control, selectively, and independently from each other, longitudinal sliding movement of the sinkers (**5'**) as well as rocking movement of the sinkers;

the needle bed is formed with spaced ribs (**7**) on which the needles are slidably positioned;

auxiliary needle guide strips (**9**) are provided, positioned, essentially in alignment with the sinkers, located on the needle bed (**1**), placed adjacent the needles to separate adjacent needles from each other defining at least a portion of a needle guide slot or groove (**10**) and extending through a zone terminating at a level between the needle cam race (**13**) and the hook, and close to the needle cam race, to provide for lateral guidance of the needles in said zone;

the sinkers (**5'**) are located adjacent the needles (**4**) in the region thereof between the hook and the portion of the needle shafts (**11**) up to said level, and providing for lateral guidance of the needles (**4**) in said region;

the sinkers (**5'**) are each formed in two parts, including a substantially L-shaped rocking element (**40**) having two arms (**39,41**) and a substantially straight shank element (**36**), a laterally protruding bearing projection (**21a**) being formed on the rocking element (**40**), the rocking element (**40**) being supported on the needle bed (**1**) with the bearing projection (**21a**), forming a fulcrum,

the shank element (**36**) is guided to slide longitudinally on one (**39**) of the arms of the rocking element (**40**);

the sinker butt (**18**) cooperationg with the first sinker cam race (**20**) generates the longitudinal sliding movement of the sinkers; and

wherein the sinker cam races (**25, 26**), generating the transverse movement of the sinkers are located above the auxiliary strips (**9, 9'**) on both sides of the bearing projection (**21a**) forming the fulcrum and cooperate, respectively, with the shank element (**36**) and the rocking element (**40**).

4,608,842

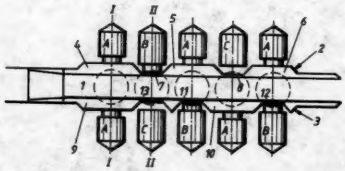
LOCK AND KEY SYSTEM

Werner Tietz, Berlin, Fed. Rep. of Germany, assignor to Zeiss Ikon AG, Fed. Rep. of Germany

Filed Jun. 25, 1984, Ser. No. 623,925

Int. Cl.[4] E05B *27/06*

U.S. Cl. 70—358 **6 Claims**



1. A lock and key system wherein an otherwise flat side of the key has at least one locking rib which projects beyond a normal key profile and is sensed with respect to elevations and depressions comprising:

a lock housing with a lock cylinder and a key channel having a plurality of identical transverse bores in said lock cylinder,

a key insertable into said lock cylinder having at least one locking rib projecting from the normal profile of said key, said locking rib being comprised of elevations and depressions,

a plurality of types of sensing elements carried in said trans-

verse bores to interact with the elevations and depressions of said locking rib,

a first type of sensing element being a cylindrical member with an end having a reduced diameter which projects into said key channel for sensing rib elevations,

a second type of sensing element being a cylindrical member with an end having a reduced diameter which projects into said key channel for sensing rib depressions,

a third type of sensing element being a cylindrical member without a reduced diameter projection,

said transverse bores being provided with internal shoulders preventing excursion of said sensing elements past said shoulders, but allowing excursion of said projections past said shoulders into said key channel to engage said key rib,

whereby said lock and key system has enhanced variation possibilities which allows actuation of an increased number of differently configured individual locks by a master key.

4,608,843

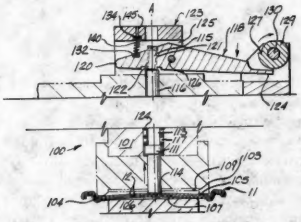
CONVERSION DIE WITH DOUBLE END SENSOR

Conrad M. Grims, Golden, Colo., assignor to Adolph Coors Company, Golden, Colo.

Continuation of Ser. No. 577,243, Feb. 6, 1984, abandoned. This application Aug. 23, 1985, Ser. No. 778,624

Int. Cl.⁴ B21B *33/02*

U.S. Cl. 72—4 **6 Claims**



1. A method of controlling a conversion die of the type used to perform operations on can ends to prevent damage from double can ends comprising the steps of:

(a) engaging a double can end between a punch and die in a manner to cause buckling thereof;

(b) axially deflecting a plunger in response to the buckling of the double can end;

(c) pivoting a foot cam in response to the plunger deflection;

(d) disengaging and rotating a spring loaded cam sensor in response to the pivoting of the foot cam;

(e) rotating a metal flag with the cam sensor between a first position and a second position;

(f) actuating a control signal generator in response to movement of the metal flag into the second position; and

(g) terminating operation of the conversion die in response to a signal generated by actuation of the control signal generator.

4,608,844

CRADLE STRAIGHTENER FEEDER

Werner K. Lehmann, Birmingham; Robert E. Lamey, Southfield, and Karl Lehmann, Dearborn Heights, all of Mich., assignors to Sesco, Inc., Detroit, Mich.

Continuation of Ser. No. 323,830, Nov. 23, 1981, Pat. No. 4,487,045. This application Nov. 15, 1984, Ser. No. 671,861

Int. Cl.⁴ B21C *47/22*

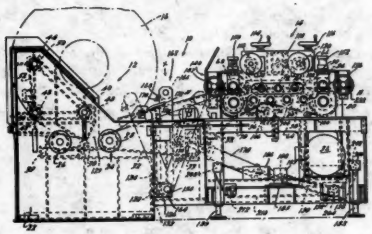
U.S. Cl. 72—43 **11 Claims**

1. An apparatus for feeding a coil of sheet metal to an accessory unit, comprising:

cradle means for holding said coil in a selected position, including drive means for rotating said coil, said drive mens rotating said coil of sheet metal around a rotational axis to feed said sheet metal out of said cradle means, said drive means contacting said coil solely at the outside periphery of said coil and feeding said coil from below the rotational axis of said coil wherein said sheet metal traveling out of said cradle means does not need to travel above a substantially horizontal plane which includes the pass line of said straightener means;

straightener means for feeding said sheet metal to said accessory unit, having input means and output means, said input means including a pair of pinch rollers comprising an upper pinch roller and a lower pinch roller and said output means including a pair of feed rollers comprising an upper feed roller and a lower feed roller, said straightener means including hydraulic means for applying pressure to said upper input pinch roller and upper output feed roller, said hydraulic means including a first means for applying a first selected pressure to said upper pinch roller and a second means for applying a second selected pressure to said upper feed roller throughout the length of the sheet metal fed through said straightener means and means for substantially completely releasing said upper input pinch roller and upper output feed roller, comprising relief valve means, in response to undesirable thicknesses of metal passing between said input means pinch rollers or said output means feed rollers; and

means for directing said sheet metal from said cradle means



to said input means of said straightener means said directing means comprising;

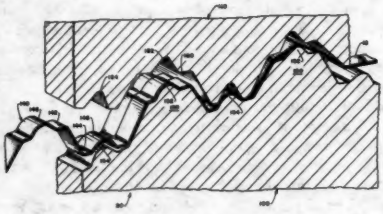
pivotally mounted means for directing said sheet metal from said cradle means to said straightener means, said pivotally mounted means having a means for contacting said sheet metal, said contacting means contacting said sheet metal once said sheet metal is released from said coil, said sheet metal traveling from said cradle to said straightener means in substantially all conditions of size of said coil does not intersect the horizontal plane associated with the current position of the rotational axis of said coil at any time from the release of the sheet metal from the coil directed to said straightener means until the sheet metal enters said straightener means and through the straightener means into an accessory unit, wherein the amount of bending of said sheet metal passing through said directing means from said cradle means to said straightener means is substantially less than the bending required to force said sheet metal to the yield point of the metal material, said contacting means having a member for peeling the leading edge of said sheet metal coil away from the outside periphery of said coil in a direction tangential to the movement of said directing means and said directing means having a pivot point wherein said sheet metal is disposed between said contacting means and said pivot point as the sheet metal travels from said cradle means to said straightener means.

4,608,845

APPARATUS FOR FABRICATING HONEYCOMB CORE STRIP

James R. Campbell, South Laguna, Calif., assignor to Thomas P. Mahoney, Balboa Island; Donald A. Ruston and Robert S. Barnes, both of Newport Beach, all of, Calif., part interest to each

Filed May 29, 1984, Ser. No. 615,084
Int. Cl.[4] B21D *13/10*
U.S. Cl. 72—44 6 Claims



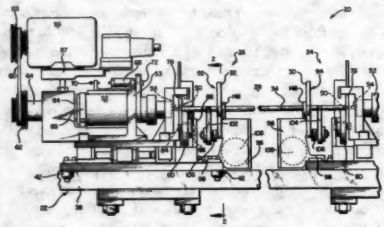
1. In an apparatus for fabricating metallic core strip for use in creating a honeycomb structure wherein the male nodes of said strip are juxtaposed to and engage the female nodes thereof, the combination of: a source of metallic ribbon; drive means located adjacent said source; and forming means connected to said drive means, said forming means including a pair of form gears, one of said gears being connected to said drive means and constituting a drive gear and the other of said gears being an idler gear, said drive gear and said idler gear having interengaged teeth to form said ribbon into a corrugated core strip and said drive and idler gears having cooperating protrusions and recesses, respectively, thereupon and therein to provide hinge points in said core strip, said protrusions being constituted by ribs on the apices of the teeth of said drive gear and said recesses being provided at the root between adjacent teeth of said idler gears.

4,608,846

DEDIMPLER APPARATUS

Melvin R. Rathbun, Huntley, Ill., assignor to Lemont Machine Company, Lincolnwood, Ill.

Filed May 30, 1985, Ser. No. 739,207
Int. Cl.[4] B21D *41/02*
U.S. Cl. 72—111 11 Claims



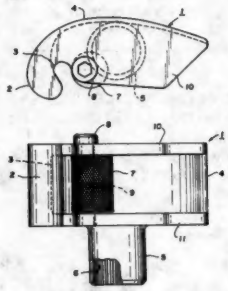
1. In dedimpler apparatus for re-sizing the cut ends of tube lengths, the combination comprising: a pair of selectively convergibly and rotatably driven, conically tipped dedimpler tools and a tubing backup pressure roller aligned with the working position of each of said tools to cooperate in defining a pair of spaced dedimpler units in a work station; and a walking-beam transfer mechanism comprising a pair of laterally spaced, oscillatable beams having a plurality of upwardly opening, substantially V-shaped notches adapted to receive tubular workpieces and to positively space and transfer said workpieces in sequential order toward and away from the dedimpler units in said work station; crank means mechanically coupled to each of said beams for directing said beams in closed, congruent, vertical, workpiece-transfer paths; and drive means connected to each of said crank means for causing coordinated cycling of said beams through said paths.

4,608,847

TOOL FOR FORMING A SCROLL

Victor De Donato, 30 Lemoyne Ave., Pittsburgh, Pa. 15228

Filed May 2, 1985, Ser. No. 729,981
Int. Cl.[4] B21C *47/00*
U.S. Cl. 72—148 3 Claims



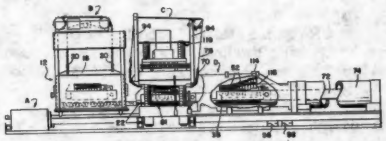
1. A tool for forming a scroll on the end protion of a metallic bar, said tool comprising a pair of spaced horizontal metal plates integral with a plate which is an outer surface curved on in the form of a scroll and a side opposite said outer surface is open and provided with a slot in the upper horizontal plate into which the end of a bar to be bent into a scroll is axially inserted, an eccentric sleeve vertically and rigidly mounted on a pivot which extends vertically through both said horizontal plates, terminating in an upper bolt head, said eccentric sleeve being substantially enclosed by said horizontal plates and positioned so as to progressively narrow the entrance of said slot when turned by said bolt head, an integral depending coupling element extending from the lower most horizontal plate for coupling to a driving motor, whereby upon turning and holding said extended bolt head by a wrench, it will progressively wedge the end portion of the bar within said tool and whereby upon driving said tool in a counterclockwise direction while supporting the free end of the strip against a guide roll, the strip end will be bent into the form of a scroll.

4,608,848

PART FORMING APPARATUS BY FLOW FORGING

Joseph J. Mele, 188 Warner Ave., Huntington, N.Y. 11743

Filed Sep. 6, 1984, Ser. No. 647,900
Int. Cl.[4] B21J *13/04*
U.S. Cl. 72—184 33 Claims



1. An apparatus for flow-forging a shaped part from a work, comprising in combination

two members spaced away from one another at a settable distance, and defining a pressure zone therebetween,

holder means for maintaining the setting of said distance,
first and second die means clamping said work therebetween,
first roller means in operative contact with one of said members for transporting at least one of said die means along a transport direction, and along a direction opposite thereto,
said first roller means including a plurality of rollers, two adjoining rollers defining a center-to-center spacing,
said members having an inclination to one another so as to cause said pressure zone to converge along said transport direction,
drive means for driving said die means along said roller means to said pressure zone, and away therefrom,
one of said die means including a plurality of adjoining pressure-transferring elements,
each pressure-transferring element having a pressure-transfer surface on one end thereof facing said roller means, and a molding surface on the other end thereof determining at least partly the shape of said part, and
a plurality of self-adjustable matching means, each being free from jarring with said roller means and being interposed between said roller means and the pressure-transfer surface of a corresponding of said pressure-transferring elements during the transport thereof in said pressure zone along said transport direction for smoothing and maximizing pressure transfer from said one of said members to said pressure transfer surface through said rolling means by each of said matching means automatically adjusting the position thereof as it passes through said converging pressure zone,
wherein each self-adjustable matching means includes a longitudinal member having a substantially plane surface of a width exceeding at least the center-to-center spacing of two adjoining rollers of said first roller means,
substantially each longitudinal member being constrained to pivot about a longitudinal axis substantially parallel to said plane surface with respect to a corresponding of said pressure-transferring elements, so that its plane surface is in operative contact with at least two adjoining rollers, and free from jarring herewith,
said pressure-transferring elements, in addition to moving in said transport direction, also moving towards said other of said members while being transported through said pressure zone,
whereby a gradually and smoothly increasing pressure is applied to said work by said members during the transport of said die means through said pressure zone, so that any recess flow-forged in said shaped part is substantially smooth and free of any ridges.

4,608,849

BENDING APPARATUS

Johannes A. H. Brugman, Papendrecht, Netherlands, assignor to Hunter Douglas International N.V., Curacao, Netherlands

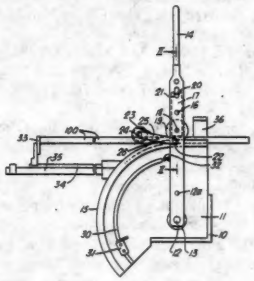
Filed Dec. 7, 1984, Ser. No. 679,508

Claims priority, application United Kingdom, Mar. 6, 1984, 8405858

Int. Cl.[4] B21D *7/02*

U.S. Cl. 72—217 **16 Claims**

4. Apparatus for bending a light gauge, profiled, metal panel to a curved shape, said apparatus comprising a frame, an anvil mounted on said frame and having a part-annular surface, a pivot bearing on said frame located at the center of curvature of said part-annular surface, an arm mounted on said bearing for pivotal movement about said center, a roller carried by said arm at a position spaced from said center and rotatable about its own axis, so that it can roll in an arc adjacent said annular surface, a mandrel acting as a shape retaining member for the profiled panel, cooperating with said arm for movement therewith at a location between said roller and said surface, said mandrel comprising a plurality of blocks each having its length parallel to the roller axis, the blocks being juxtaposed in side-by-side relation and each shaped to conform to the profile of the panel to be bent, and at least one flexible element for transferring movement of the arm to the mandrel, said flexible element passing through all of said blocks and holding them in juxtaposed relation in a way to allow slight relative movement between the blocks whereby, in use, with the mandrel engaged in the profile of a panel to be bent, the mandrel moves relative to the part-annular surface, either between the web of the panel



and the roller, for an inside bent in the panel, or between a web of the panel and the anvil for an outside bend in the panel, wherein the connection between the arm and the mandrel is a lost motion connection, such that the mandrel does not begin to move until the roller has moved away from the zone of the clamp.

4,608,850

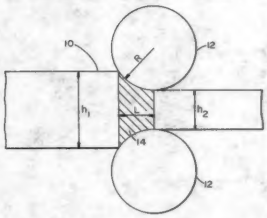
ALLIGATOR DEFECT ELIMINATION

John A. Ballantyne, Bettendorf, Iowa, and William L. Otto, Jr., Allegheny Township, Westmoreland County, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 12, 1985, Ser. No. 775,344

Int. Cl.[4] B21B *31/20*

U.S. Cl. 72—240 **1 Claim**



1. A method of operating a rolling mill in a manner that avoids the occurrence of alligatoring in a slab of metal as it is reduced in thickness in the mill, the slab being subject to a schedule of repeated passes through the mill to effect a predetermined amount of reduction in the thickness of the slab in each pass, the method comprising the steps of:
analyzing the pass schedule of a slab to be reduced in thickness,
noting any pass in the schedule that has a combination of entry gauge and reduction draft that may subject the slab to alligatoring,
presenting a nose of the slab to the bite of the mill,
changing the size of the working gap of the mill by an amount that changes the combination of entry gauge and reduction draft to one that does not subject the slab to alligatoring,
directing the nose of the slab into the bite of the mill having the changed working gap,
once the nose of the slab has entered the bite of the mill,

returning the working gap of the mill to the size that will effect the scheduled reduction in thickness of the slab, and completing the pass of the slab through the mill to effect the scheduled reduction in thickness of the slab.

4,608,851

WARM-WORKING OF AUSTENITIC STAINLESS STEEL

Ashok K. Khare, Warren, Pa., assignor to National Forge Co., Irvine, Pa.

Continuation of Ser. No. 592,784, Mar. 23, 1984, abandoned.
This application Nov. 1, 1985, Ser. No. 794,265
Int. Cl.[4] B21J *1/06*
U.S. Cl. 72—364 **8 Claims**

1. A process for developing the mechanical and physical properties of an austenitic stainless steel workpiece, the process comprising the steps of:

(1) hot working the workpiece;

(2) continuously cooling the workpiece from its hot working temperature to a temperature below 200° F. (95° C.); and

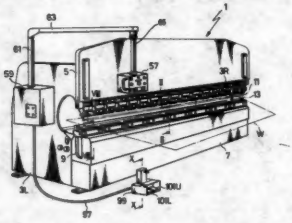
(3) warm working the workpiece by subjecting it to a force sufficient to achieve said properties during said continuously cooling step while the workpiece has a surface temperature in the range above 200° F. (95° C.) and below the lower critical temperature, with both said hot working and warm working steps being carried out in a single heating cycle.

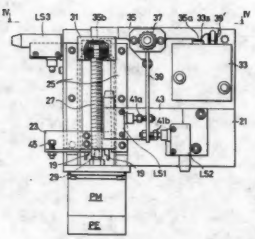
4,608,852

PRESS MACHINE

Tsuneo Kogure; Yuji Tsuchiyama, both of Hatano; Tadashi Amano, Sagamihara; Hideaki Takahashi, Atsugi; Katsuji Sekita, Hiratsuka, and Ichio Akami, Atsugi, all of Japan, assignors to Amada Company, Limited, Japan

Filed Aug. 21, 1984, Ser. No. 642,767
Claims priority, application Japan, Aug. 24, 1983, 58-129755[U]; Sep. 2, 1983, 135388[U]; Sep. 7, 1983, 58-137797[U]; Sep. 14, 1983, 58-168349; Sep. 14, 1983, 58-141574[U]
Int. Cl.[4] B21D *31/00*
U.S. Cl. 72—389 **9 Claims**





1. A press machine, comprising:

a frame;

a ram connected to and movable with respect to the frame, said ram supporting bending tools;

means for detecting movement of the ram, said means including an operation member mounted on the ram, and a position determining member mounted on the frame in an adjustable position such that when the ram moves a desired amount the operation member contacts and causes movement of the position determining member;

hydraulic switch means mounted on the frame for controlling movement of the ram;

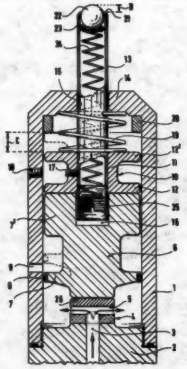
lever means mounted on the frame and interconnecting the position determining member with the hydraulic switch means such that the movement of the position determining member controls the hydraulic switch means.

4,608,853

PERCUSSION APPARATUS

André Coulon, Bessoncourt, France, assignor to Alsthom-Atlantique, Paris, France

Filed Feb. 7, 1985, Ser. No. 699,112
Claims priority, application France, Feb. 7, 1984, 8401843
Int. Cl.[4] B21D *31/06*
U.S. Cl. 72—434 **4 Claims**



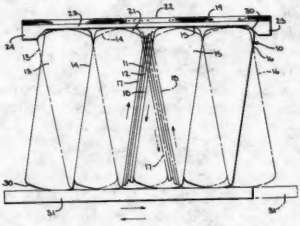
1. In a percussion apparatus having a hollow body, a tool axially slidable in said body, and having a projection extending axially outside of said body at one end thereof, and a compressed air inlet and means responsive to compressed air to impart percussive movement of said tool and to drive said projection outwardly of said body, a first spring interposed between said body and said tool for biasing said tool in a direction to retract the projection into said body, the improvement wherein said tool projection comprises a hollow tube having one end slidably projectable from the end of said hollow body, a ball within said hollow tube, said one end of said tube forming an opening smaller than the diameter of said ball and holding said ball captive with said ball forming said spherical portion and partially projectable outwardly of said tube at said opening, and a second spring lodged in the tube and abutting said ball for urging said ball against said tube one end and extending parallel with said first spring and stop means within said body limiting percussive movement of said tool against the bias of said first spring means to a distance C, and the projection of said ball through said tube opening by said second spring being of a distance D smaller than that of C, whereby said percussion apparatus recoil is of a distance C-D for reducing fatigue of the percussion apparatus operator during apparatus operation.

4,608,854

TEST HOLDER FOR FLAT SPECIMENS

Gaston A. Vandermeerssche, 9240 N. Sleepy Hollow La., Milwaukee, Wis. 53217

Filed Jan. 4, 1985, Ser. No. 688,697
Int. Cl.[4] G01N 3/56
U.S. Cl. 73—7 17 Claims



1. A holder for flat test specimens, comprising:

a first and a second body member defining substantially flat and opposed surfaces; and

first and second resilient pad members operatively associated with said body member surfaces and adapted to be positioned oppositely with respect to each other with a flat specimen therebetween;

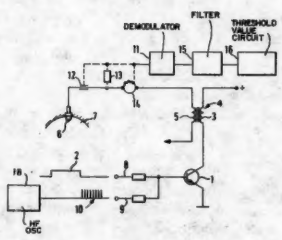
said first and second body members having end sections, a portion of which includes opposing curved surfaces for contact with a moveable platform.

4,608,855

CIRCUIT FOR THE RECOGNITION OF KNOCKING OF AN OTTO ENGINE

Reinhold Blauhut, Werdohl, Fed. Rep. of Germany, assignor to Atlas Fahrzeugtechnik GmbH, Fed. Rep. of Germany

Filed Jul. 27, 1984, Ser. No. 635,174
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1983, 3327766
Int. Cl.[4] G01L 23/22
U.S. Cl. 73—35 10 Claims



1. A circuit for the recognition of knocking of an engine having a high-voltage ignition circuit and having a spark plug in the combustion chanber of a cylinder which also serves as an ionic current probe, said knock recognition circuit comprising:

(a) an excitation voltage generator comprising a high frequency oscillator non-galvanically coupled to the spark plug for producing high frequency voltage oscillation; and

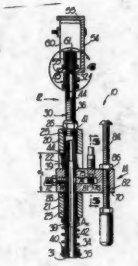
(b) an evaluation circuit for measuring voltage coupled into said high-voltage ignition circuit, wherein said evaluation circuit includes an amplitude demodulator for the high-frequency voltage oscillation.

4,608,856

DOUBLE FEED DETECTION DEVICE

John Daly, Jr., Smyrna, Ga., assignor to John L. Williams, Atlanta, Ga.

Filed May 11, 1983, Ser. No. 493,522
Int. Cl.[4] B65H 7/04
U.S. Cl. 73—37.7 4 Claims



1. A double feed detection device for detecting the feeding of multiple substrate sheets over a feed support surface to processing equipment comprising:

a support frame fixedly mounted adjacent the feed support surface;

an elongate gauge tube having opposed ends and defining an axially extending passage therethrough opening onto said opposed ends;

mounting means for reciprocally mounting said gauge tube on said support frame so that said gauge tube is oriented generally normal to the feed support surface with one of said ends thereof located a prescribed gauging distance from the feed support surface, said mounting means including stop means adjustably mounted on said gauge tube for limiting the movement of said gauge tube in said support frame toward the feed support surface and urging means for urging gauge tube toward the feed support surface so that the prescribed gauging distance can be changed by adjusting said stop means on said gauge tube;

a supply source of fluid under pressure;

connection means connecting the fluid from said supply source to said passage in said gauge tube between said opposed ends;

an indicator member closing that end of said passage in said gauge tube opposite the feed support surface and slidably movable thereon between first and second positions so that the fluid in said passage in said gauge tube urges said indicator member toward said second position;

forcing means for constantly urging said indicator member toward said first position in opposition to the fluid in said passage so that said indicator member remains in said first position until the number of substrate sheets located between said gauge tube and the feed support exceeds a prescribed quantity to cause the pressure in said gauge tube passage to rise sufficiently to force said indicator member from said first to said second position; and

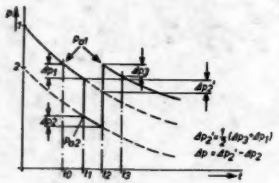
drive means connected to said gauge tube to selectively force said gauge tube away from the feed support surface against said urging means to increase the distance between said one of said ends of said gauge tube and the feed support surface to effectively disable the detecting capability of said device until said urging means is allowed to move said gauging tube back toward the support surface until arrested by said stop means.

4,608,857

METHOD FOR CHECKING PIPES OR PIPE NETWORKS FOR LEAKS

Peter Mertens, and Wilfried Meuser, both of Bremen, Fed. Rep. of Germany, assignors to Fried. Krupp GmbH, Essen, Fed. Rep. of Germany

Filed Oct. 31, 1983, Ser. No. 547,096
Int. Cl.[4] G01M *3/00*
U.S. Cl. 73—40.5 R 13 Claims



1. Method for checking at least one isolatable section of a pipe or pipe network for leaks, comprising filling the section with a liquid, and effecting at least one pressure change determination by the steps of: placing the liquid in the section at a first initial pressure value and then detecting the change in pressure from the first initial value during a first measuring interval; placing the liquid in the section at a second initial pressure value different from the first initial pressure value and then detecting the change in pressure from the second initial value during a second measuring interval; providing representations of the changes in pressure from the first and second initial pressure values, adjusted to a common time standard; forming a representation of a time standardized pressure change difference value from the adjusted representations of the changes in pressure; forming a representation of a time standardized allowed pressure change difference value; and comparing the pressure change difference value representation with the allowed value representation to determine the existence of a leak in the section, wherein said step of effecting at least one pressure change determination further comprises: again placing the liquid in the section at the first initial pressure value after the second measuring interval and then detecting the change in pressure from the first initial value during a third measuring interval; said step of providing representations comprises deriving, from the pressure changes detected during the first and third intervals, as the adjusted representation of the change in pressure from the first initial value, a representation of an approximation of the pressure change from the first initial pressure value which would occur during the second measuring interval.

4,608,858

PNEUMATIC TEST PLUG

Robert M. McKinnon, P.O. Box 648, Bedford, Tex. 76021

Filed Nov. 5, 1984, Ser. No. 668,624
Int. Cl.[4] G01M *3/02*
U.S. Cl. 73—49.8 11 Claims

1. An apparatus for use for testing a fluid system comprising: an inflatable member comprising wall structure formed of flexible material defining a chamber with an opening leading to said chamber,

means coupled to said opening to allow gas under pressure to be injected into said chamber by way of said opening to cause said member to inflate and subsequently to be released from said chamber by way of said opening to allow said member to deflate,

the inside of said wall structure comprising a plurality of ridges of said flexible material projecting inward from the inside of said wall structure for causing said member to retain its original shape upon deflation thereof,

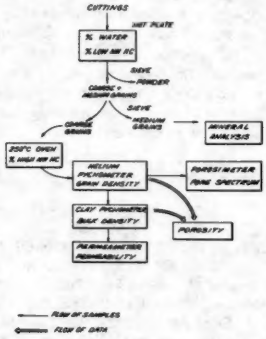
said ridges comprise a plurality of ridges in spaced apart lines each of which extends from near said opening to the end of said chamber opposite said opening.

4,608,859

PROCESS AND APPARATUS FOR ANALYZING CUTTING FROM OIL AND GAS WELLS

Mark G. Rockley, Stillwater, Okla., assignor to Microlytics, Inc., Tillwater, Okla.

Filed Dec. 28, 1983, Ser. No. 566,183
Int. Cl.[4] E21B *47/00*
U.S. Cl. 73—153 8 Claims



1. A process for measuring the water and light hydrocarbon content of a sample of known weight of a cutting from an oil or gas well, which comprises the steps of heating the sample to about between 105° and 110° C. to volatilize substantially all of the water and light hydrocarbon molecules contained in the sample, passing the volatilized water and light hydrocarbon molecules through a plurality of molecular sieves having an initially known weight and having pore sizes selected to separate substantially all of the volatilized water molecules from the volatilized light hydrocarbon molecules and to retain substantially all of the volatilized water molecules, weighing the sample after substantially all of the water and light hydrocarbon molecules contained therein have been volatilized and weighing the molecular sieves after substantially all of the water molecules volatilized from the sample have been retained thereby.

4,608,860

STALL DETECTOR

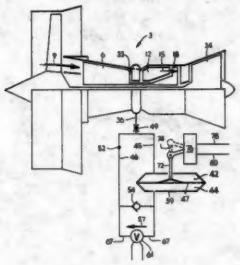
Michael G. Charrier, Cincinnati, Ohio, and Peter G. Smith, Daphne, Ala., assignors to General Electric Company, Cincinnati, Ohio

Filed Jul. 1, 1985, Ser. No. 750,125
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—115 3 Claims

1. A sensor for a gas turbine engine having a Compressor Discharge Pressure (CDP), comprising:

(a) accumulator means for accumulating CDP;

(b) sensing means for sensing a drop in CDP below the accumulated CDP; and



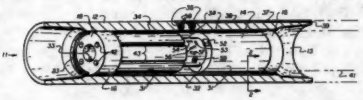
(c) indicator means for producing a signal in response to the drop in CDP when sensed.

4,608,861

MWD TOOL FOR MEASURING WEIGHT AND TORQUE ON BIT

William J. Wachtler, San Jose, and Thomas M. Yang, Los Altos Hills, both of Calif., assignors to MacLeod Laboratories, Inc., San Jose, Calif.

Filed Nov. 7, 1984, Ser. No. 668,980
Int. Cl.[4] E21B *47/00*
U.S. Cl. 73—151 **21 Claims**



1. A tool for measuring compression and torsion loads experience by a drill bit while drilling comprising, in combination:

an outer sleeve with a central bore, connectable into a drill string,

an inner sleeve having an annular shoulder at each distal end of a configuration similar and approximately congruent to that of the central bore of the outer sleeve, coaxially located within the central bore of the outer sleeve, the inner sleeve also having a central bore through which drilling mud may flow,

means for securing the annular shoulders of the inner sleeve within the central bore of the outer sleeve whereby the inner and outer sleeves support and experience compression and torsion load in parallel,

a first means for generating an electrical signal responsive to axial strain of the inner sleeve,

a second means for generating an electrical signal responsive to torsional strain of the inner sleeve, and

means for transmitting the generated electrical signals to a ground surface station.

4,608,862

SPLINE CHECKING FIXTURE

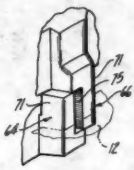
Chester Klukowski, St. Clair Shores, and Richard Lysic, Fraser, both of Mich., assignors to Flint & Walling, Inc., Warren, Mich.

Filed Jan. 18, 1985, Ser. No. 692,949
Int. Cl.[4] G01M *13/02*
U.S. Cl. 73—162 **7 Claims**

7. A checking fixture for use in checking the tooth spacing along the pitch circle diameter of a splined or similar gear-like member having internal or external teeth comprising:

first and second cylindrical members each having a plurality of partial teeth, the partial teeth of said first and second members being arranged to cooperate with each other to form interfitted complementary paris of complete but segmented teeth which complete but segmented teeth are adapted to fit within the space between the teeth of the member being checked;

means for angularly indexing one of said first and second members relative to the other about an axis corresponding with the center of said pitch circle, to thereby increase the effective width of each interfitted segmented tooth as measured along said pitch circle;



said partial teeth being substantially longer, as measured along an axis parallel to the axis of the member being checked, than the thickness of the member being checked, as measured along the same axis; and

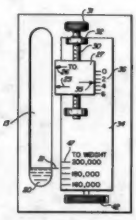
an adjustable test member support means for axially positioning and supporting the member being checked at any desired position along the axial length of said partial teeth, whereby as said partial teeth wear from frequent use the portion thereof being engaged by a member being checked can be moved along said axial length of said partial teeth to utilize an unworn portion.

4,608,863

AIRCRAFT TAKEOFF AND ABORT INSTRUMENT

Marcus F. Cooper, 100, S. Interlachen, Apt. 501, Winter Park, Fla. 32789

Filed Oct. 24, 1983, Ser. No. 544,700
Int. Cl.[4] G01C *21/10*
U.S. Cl. 73—178 T **15 Claims**



1. An Aircraft Takeoff and Abort Instrument comprising in combination:

a closed tube system having at least one vertical tube having a transparent portion to visually expose liquid therein, said closed tube system being partially filled with a clearly visible liquid responsive to linear acceleration of the aircraft;

adjustable indicating means to indicate the critical liquid positions in said vertical tube corresponding to aircraft ABORT and TAKEOFF; and

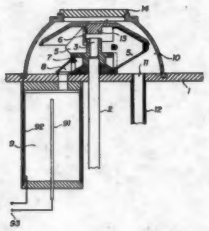
an expansion diaphragm operatively connected to said closed-tube system to equalize variations in pressure.

4,608,864

DEVICE FOR SAMPLING AND MEASURING THE FLOW RATE OF A CONTINUOUSLY OR INTERMITTENTLY CIRCULATING LIQUID

Jean-Louis Savoyet, La Mayrie, F-38770 La Motte D'Aveillans, France

Filed Jun. 28, 1984, Ser. No. 625,469
Claims priority, application France, Jun. 30, 1983, 83 11121
Int. Cl.[4] G01F *5/00*; G01N *1/20*
U.S. Cl. 73—202 14 Claims



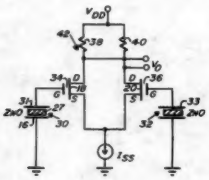
1. A device for sampling and measuring the flow rate of a continuously or intermittently circulating liquid in particular a foaming liquid, comprising an inlet and an outlet for the liquid, sampling means connected between said inlet and said outlet for taking a sample of the liquid in proportions which are accurate and constant over time, a container connected to said sampling means for receiving the sample thus taken and electrical means in said container for measuring the volume of the sample directly in the container.

4,608,865

INTEGRATED PYROELECTRIC SENSOR AND METHOD

Richard S. Muller, Kensington, and Dennis L. Polla, Berkeley, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Dec. 5, 1984, Ser. No. 678,871
Int. Cl.[4] G01F *1/68*
U.S. Cl. 73—204 13 Claims



1. An integrated pyroelectric sensor for measuring fluid flow velocity of a medium comprising:

a semiconductor substrate;

a pair of pyroelectric capacitors fabricated on said substrate, each of said pyroelectric capacitors developing a voltage as a function of its temperature, the temperature of said pyroelectric capacitors changing in response to the fluid flow of said medium about said sensor;

means for heating said substrate to a selected temperature at least greater than the ambient temperature of said medium; and

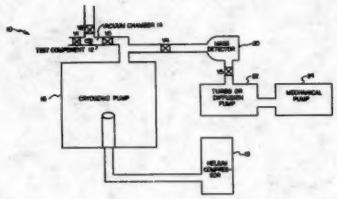
means for measuring the voltage difference between said pyroelectric capacitors, the fluid flow velocity being a function of said voltage difference.

4,608,866

SMALL COMPONENT HELIUM LEAK DETECTOR

Lyle E. Bergquist, Lakewood, Colo., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Mar. 13, 1985, Ser. No. 711,228
Int. Cl.[4] G01M *3/20*
U.S. Cl. 73—40.7 20 Claims



1. A leak detector for sensing a test gas leaking from a test object comprising:

a vacuum chamber for receiving the test object which has been contacted by the test gas,

a cryogenic pump connected to said vacuum chamber, said cryogenic pump having means for entrapping a purge carrier gas but not entrapping the test gas, and

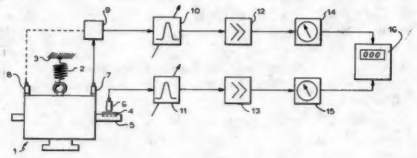
a mass detector connected to said vacuum chamber for detecting the test gas leaked from the test object.

4,608,867

METHOD FOR THE DYNAMIC BALANCING OF ROTATING MACHINES IN ASSEMBLED CONDITION

Ivan S. Iliev, Sofia, Bulgaria, assignor to I E P "N. Belopitov", Sofia, Bulgaria

Filed Mar. 11, 1985, Ser. No. 710,135
Claims priority, application Bulgaria, Mar. 9, 1984, 64580
Int. Cl.[4] G01M *1/22*
U.S. Cl. 73—462 1 Claim



1. In a method of dynamic balancing of rotating machines in assembled condition, said machine being symmetrical with respect to the center of weight, said method including successively measuring the effective values of the speed of radial vibrations of the machine caused by unbalance in the balancing planes of the two bearings of the machine, determining the correction masses for each balancing plane, dismantling the machine and placing the respective correction masses in the two balancing planes at angles measured from a mark on the shaft of the machine, then assembling the machine and taking a control measurement of the effective value of the radial vibrations of the machine with the machine running at a predetermined no-load speed, the improvement which comprises before measuring the effective values of the speed of radial vibrations the machine is vibro-isolated from the surrounding media after that successively measuring in the planes of the two bearings of the machines the relative phases of acceleration of radial vibrations caused by unbalance, determining correction masses for each balancing plane by dividing the effective values of the speed of radial vibration caused by unbalance by a constant obtained from the speed of rotation of the machine, the mass of the machine, the main inertia moment of the machine at its rotor, the distance between the center of

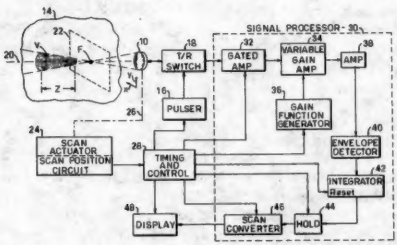
weight of the machine and planes of the two bearings, the distance between the center of weight of the machine and the balancing planes, and the distance from the axis of the rotor to the places of mounting the second correction masses, said second correction masses being placed at angles obtained from the relative phases of acceleration are of radial vibrations caused by unbalance, measured in the planes of their respective bearings, with the addition 270° along the direction of rotation of the rotor.

4,608,868

ULTRASONIC REFLEX TRANSMISSION IMAGING METHOD AND APPARATUS

Philip S. Green, Menlo Park, Calif., assignor to SRI International, Menlo Park, Calif.

Filed Mar. 22, 1985, Ser. No. 715,199
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—606 **42 Claims**



1. In an ultrasonic imaging system comprising transducer means for receiving ultrasonic signals reflected from within an object under examination, the combination including

means for focusing the transducer means at a focal point within the object, and

means responsive to reflected signals received by the transducer means from a range zone that is opposite the focal point from the transducer means for generating a unitary signal value that is substantially dependent upon, and provides a measure of, attenuation of acoustic waves at the focal point.

4,608,869

SINGLE PARTICLE DETECTION SYSTEM

Cathy M. Lerner, Rehovot, Israel, assignor to Trustees of Boston University, Boston, Mass.

Continuation-in-part of Ser. No. 409,929, Aug. 20, 1982, abandoned. This application Jun. 20, 1984, Ser. No. 622,642
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—644 **16 Claims**

5. A method of measuring an acoustic response comprising:

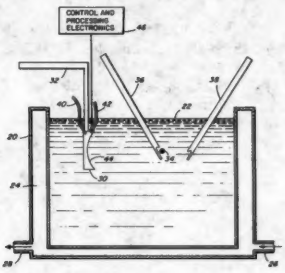
providing at least one acoustic transducer;

suspending at least the one acoustic transducer in a low melting point medium;

melting the low melting point medium surrounding the suspended transducer and relocating the suspended transducer within the medium;

cooling the low melting point medium surrounding the suspended transducer to resolidify the medium about the suspended transducer; and

transmitting an acoustic wave relative to the suspended acoustic transducer through the low melting point medium and monitoring the acoustic waves in the medium



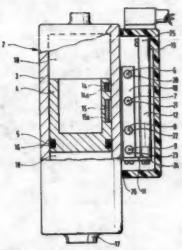
such that the suspended transducer at least transmits or monitors the acoustic waves.

4,608,870

PRESSURE FLUID RESERVOIR

Werner Huber, Schwaikheim, and Heinz Leiber, Oberriexingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 31, 1984, Ser. No. 687,889
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1984, 3411367
Int. Cl.[4] G01L *7/16, 9/14, 19/04*
U.S. Cl. 73—708 **18 Claims**



1. A pressure fluid reservoir having a cylinder, a piston displaceable therein, a gas chamber in said cylinder defined by said piston and an upper end of said cylinder, a pressure fluid chamber likewise defined by said piston and a lower end of said cylinder, a reservoir connection at said lower end of the cylinder defining the pressure fluid chamber, and means operating in a non-contacting manner for indicating at least one piston position, wherein at least one of the means is disposed outside said cylinder, at least one piston position indicating means coupled to an adjusting means and disposed such as to be axially adjustable relative to said cylinder, which upon temperature changes in fluid in said pressure fluid chamber generates adjusting movements.

4,608,871

DEVICE FOR MEASURING THE LIQUID PORTION OF A TWO-PHASE FLOW OF GAS AND LIQUID

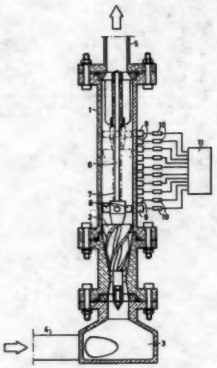
Arne H. Schleimann-Jensen, Jupitervägen 28A, S-191 47 Sollentuna, Sweden

PCT No. PCT/SE84/00276, § 371 Date Apr. 18, 1985, § 102(e) Date Apr. 18, 1985, PCT Pub. No. WO85/00881, PCT Pub. Date Feb. 28, 1985

PCT Filed Aug. 15, 1984, Ser. No. 731,625

Int. Cl.[4] G01F *1/74, 1/115*

U.S. Cl. 73—861.04 3 Claims



1. A device for measuring the liquid portion of a two-phase flow of gas and liquid, particularly in conveying a liquid by means of a gas, in which two-phase flow the ratio of mixture between gas and liquid is widely varying, said device comprising a tubular housing (1) and a turbine wheel (2) with axial throw-flow rotatably mounted therein, said turbine wheel being provided with at least one magnetic element (8) at a radially outward portion thereof, said element having limited extent axially and peripherally of said turbine wheel (2), said device furthermore comprising magnetic pick-up means (9) adapted to emit output signals responsive to the rotary speed of the turbine wheel (2), said wheel being mounted for axial movement in the direction of flow from an initial position against a biassing force, characterized in that a plurality of pick-up means (9) are arranged axially spaced along the housing (1) for allowing a measuring of rotary speed of the turbine wheel (2) at various positions of movement within the housing (1) responsive to density as well as speed changes of the flow and hence a determination of the liquid portion thereof by means of a converting device (11), connected to all of the pick-up means (9), the tubular housing (1) preferably being mounted vertically with the turbine wheel (2) in its initial position being located lowermost.

4,608,872

HAND-OPERATED RATCHET SPANNER FOR TIGHTENING SCREWS

Eberhard Mayer, Kirchheim; Oskar Mohilo, Lorch, and Jürgen Koltermann, Aalen, all of Fed. Rep. of Germany, assignors to Dr. Staiger, Mohilo & Co., GmbH and Belzer Dowidat GmbH, both of, Fed. Rep. of Germany

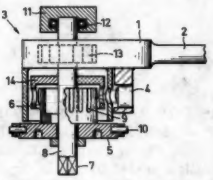
Filed Aug. 9, 1984, Ser. No. 639,019

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1983, 3328673

Int. Cl.[4] B25B *23/142*

U.S. Cl. 73—862.23 24 Claims

1. In a hand-operated ratchet spanner for tightening screws, the spanner being of the type which has a spanner head carrying shaft means for rotating a screw, said spanner further including means for determining the torque and means for determining the angle of rotation of a screw which is being tightened by the rotation of said shaft means, electronic means responsive to said torque and angle determining means for initiating an output signal upon reaching a predetermined tightening value, the improvement comprising signal generating and receiving means defining said angle determining means, said signal generating and receiving means including means carried by said spanner head cooperative with a pulse wheel nonrotatably carried by base means for creating output



pulses indicative of the rotation of said shaft means, said electronic means being carried by said spanner and including programmable microprocessor means for inputting values corresponding to desired predetermined tightened values of associated screws, handle means for freely rotatably gripping said shaft means at one side of said spanner head, and said base means being located at another side of said spanner head opposite said one side.

4,608,873

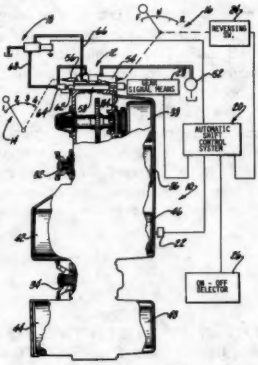
ELECTIVE AUTOMATIC SHIFT TRANSMISSION

Gilbert E. Redzinski, Niles, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Apr. 27, 1983, Ser. No. 488,907

Int. Cl.[4] B60K *41/04;* F16H *5/42*

U.S. Cl. 74—866 6 Claims



1. For use in a vehicle of the type having an engine coupled with traction wheels through a driveline including a change-speed transmission, said transmission including drive direction reversing means, a drive direction selector for manual control of the reversing means and having a forward and reverse position, said transmission including ratio changing means, a manual gear selector for operation of the ratio changing means for shifting the transmission into a selected gear, and control means responsive to a control signal for upshifting and downshifting between first and second gears, the inprovement comprising:

a speed signal generator adapted to be coupled with said driveline for producing a speed signal corresponding to the speed of the vehicle,

a shift point signal means coupled with the speed signal generator and responsive to said speed signal for producing a second gear signal when the speed signal increases above a first predetermined value and a first gear signal when the speed signal decreases below a second predetermined value,

a reversing signal generator connected with said drive direction selector and adapted to produce a reversing signal in response to movement of the selector means between forward and reverse positions,

inhibit means responsive to the reversing signal for producing an inhibit signal having a predetermined time duration after the occurrence of said reversing signal,

speed decision logic means including means coupled with the shift point signal means and responsive to the second gear and first gear signals for producing respective upshift and downshift signals and being responsive to an inhibit signal for delaying the change from an upshift signal to a downshift signal for a time interval corresponding to the duration of the inhibit signal,

said time interval being at least as long as the time required for operation of said reversing means, whereby the transmission cannot be downshifted while the drive reversing means is being actuated,

a manually actuable mode selector means for producing an on signal or an off signal,

and gear decision logic means having a first input coupled with the speed decision logic means, a second input coupled with the mode selector means and an output coupled with said control means,

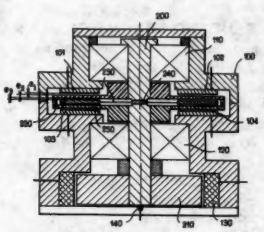
said gear decision logic means being operative to develop a second gear or first gear control signal in response to the upshift or downshift signals respectively from the speed logic means when the mode selector produces an on signal and being operative to develop only a second gear when the mode selector produces an off signal.

4,608,874

GYROSCOPE APPARATUS ROTATING CASING FOR A ROTOR

Jean-Thierry Audren, Les Ulis, France, assignor to Societe de Fabrication d'Instruments de Mesure (S.F.I.M.), Massy, France

Filed May 1, 1984, Ser. No. 606,034
Claims priority, application France, May 6, 1983, 83 07597
Int. Cl.[4] G01C *19/28, 19/30*
U.S. Cl. 74—5.41 **6 Claims**



1. A gyroscope apparatus comprising:

a housing;

a flywheel within said housing which is free to oscillate with at least two degrees of freedom about a central position in which the flywheel axis is aligned with the axis of a drive shaft, said flywheel being held radially and rotated relative to said housing by mechanical fitting of the flywheel to the drive shaft;

electrostatic means for controlling the position of the flywheel, said means including electrodes which are fixed relative to the housing and which face corresponding conducting surfaces of the flywheel; and

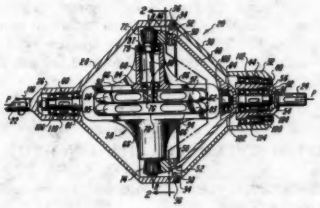
a rigid spinning casing made substantially of dielectric material which encloses the flywheel in such a manner as to interpose a dielectric surface between the corresponding conducting surfaces of the flywheel and each electrode, said casing being fixed to the flywheel drive shaft, whereby the physical gap between the flywheel and the electrodes is increased without corresponding increase of the equivalent dielectric gap between the conducting surfaces of the flywheel and the electrodes.

4,608,875

INERTIAL TRANSMISSION

Henry W. Wallace, Bradenton, Fla., assignor to Wallace Associated Research, Lakewood, Colo.

Continuation of Ser. No. 420,001, Sep. 20, 1982, abandoned. This application Apr. 25, 1985, Ser. No. 726,930
Int. Cl.[4] F16H *33/08*
U.S. Cl. 74—64 **6 Claims**



2. A transmission appartus for converting torque to angular velocity and angular velocity to torque using angular momentum in which less than three axes of rotation of the transmission apparatus are required for providing torque and angular velocity to a changing load, comprising:

a source of power;

an input means having an input axis being connected to said source of power;

an output means having an output axis and being connected to the changing load, said output means rotating 360° using the power supplied to said input means by said source of power, said output axis being parallel to said input axis;

transmission means connected to said input means and said output means, said transmission means including a first body, a second body, and means for moving each of said first body and said second body, said means for moving connected to each of said first body and said second body, said first body and said second body being operatively connected to said output means and said input means such that a cyclic, continuous changing of the moment of inertia, from a predetermined, fixed minimum value to a predetermined fixed maximum value, of said first body and said second body relative to said output axis occurs when the angular velocity of said input means is different from the angular velocity of said output means and a fixed moment of inertia of said transimission means is minimized, and wherein each of said first body and said second body includes:

a first surface area,

a second surface area, said first surface area being less in area than said second surface area,

an axis of rotation perpendicular to its second surface area,

a center of mass wherein its axis of rotation continuously passes through said center of mass,

a longitudinal axis wherein its axis of rotation is continuously perpendicular to said longitudinal axis, and

an axis of symmetry being less than a three-fold axis of symmetry, and wherein said means for moving includes:

first means connected to said output means for moving each of said first body and said second body along a three-dimensional path, said first body moving in a counter-rotating manner relative to said second body, said first means including a first shaft means and a second shaft means, said first shaft means being connected to said first body and said second shaft means being separate from said first shaft means and being connected to said second body,

second means connected to each of said first body and said second body for fixedly attaching each of said first body and said second body in an axial direction along its axis of rotation, and

third means connected to said second means for use in permitting rotation of each of said first body and said second body about its axis of rotation, each of said first body and said second body axis of rotation being continuously fixed relative to its axis of symmetry during rotation of each of said first body and said second body, said third means including first bearing means and second bearing means, said first bearing means located adjacent to said first shaft means wherein said first shaft means rotates about said longitudinal axis of said first shaft means, said second bearing means located adjacent to said second shaft means wherein said second shaft means rotates about said longitudinal axis of said second shaft means.

4,608,876

ASSISTED STEERING MECHANISM WITH RACK AND PINION

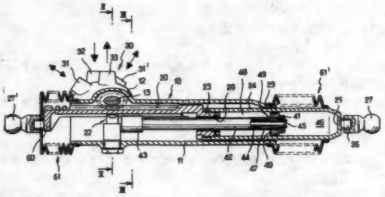
Jorge E. Rosell, Barcelona, Spain, assignor to Bendiberica S.A., Barcelona, Spain

Filed Sep. 12, 1984, Ser. No. 650,749

Claims priority, application Spain, Sep. 21, 1983, 525776

Int. Cl.[4] B62D *3/12, 5/10*

U.S. Cl. 74—388 PS **14 Claims**



1. A power steering mechanism, comprising

a stationary elongated hollow casing,

a rack body having one end, reciprocable within said casing and having teeth in meshing engagement with a driving pinion gear journaled within said mechanism and actuable by an input shaft member,

a fluid pressure power unit including a stationary piston fixedly connected to said casing by a hollow piston rod, and a cylinder member having an outer peripheral surface and fixedly connected to said one end of the rack body and extending in prolongation thereof, said piston delimitating within said cylinder member a pair of opposite pressure chambers, and

distribution valve means operable by said input shaft member to supply selectively fluid pressure to said pressure chambers,

wherein said hollow piston rod extends coaxially within a tubular part of said casing having one annular distal end, the outer peripheral surface of said cylinder member cooperating in sliding engagement with said distal end of the tubular part of said casing and the cylinder member having a closed end opposite said rack body provided with first output connecting means for connection to a steerable wheel, said rack body having a second end provided with second output connecting means for connection to a steerable wheel.

4,608,877

GEAR SHIFT DEVICE FOR TRANSMISSIONS

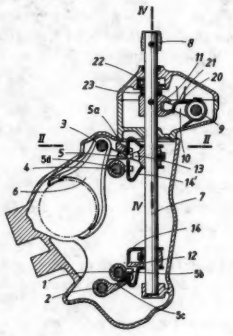
Kiyokazu Okubo, Fujimi, Japan; Walter Guss, Gössendorf, and Herwig Leinfellner, Graz, both of Austria, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 13, 1984, Ser. No. 650,027

Claims priority, application Japan, Oct. 5, 1983, 58-186090

Int. Cl.[4] G05G *9/12, 5/10*

U.S. Cl. 74—473 R **6 Claims**



1. A gear shift device for transmissions, comprising a plurality of gear shift rods provided with connecting members and clutch-actuating shift forks, said rods being arranged in parallel with one another and mounted to be movable in the lengthwise direction thereof, and a gear shift shaft provided with fingers engageable with said connecting members, said gear shift shaft being disposed at right angles to said gear shift rods and rotationally and axially movable around and along an axis thereof, said gear shift rods consisting of a plurality of groups of rods disposed in a plurality of positions which are spaced from each other along the axis of said gear shift shaft, said fingers being fixed to a plurality of spaced portions of said gear shift shaft so as to be opposed to said groups of gear shift rods.

4,608,878

REDUCED-WEIGHT GEAR CRANK

Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Continuation of Ser. No. 291,574, Aug. 10, 1981, abandoned. This application May 31, 1985, Ser. No. 739,754

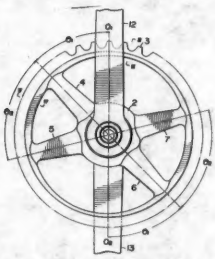
Claims priority, application Japan, Aug. 18, 1980, 55-117846[U]; Aug. 18, 1980, 55-117847[U]; Dec. 28, 1980, 55-188831[U]

Int. Cl.[4] G05G *1/14*

U.S. Cl. 74—594.2 **7 Claims**

1. A gear crank comprising a crank having a crank shaft and a pair of crank arms fixed to both axial ends of said crank shaft, and an adapter supporting an annular chain gear solely, said adapter providing the only support for said chain gear and supporting said chain gear through two groups of stays each group having two stays, said stays of each of said groups being positioned rearwardly with respect to a respective one of said corresponding crank arms in the drive-revolving direction thereof, a stay closest to each crank arm being positioned at an angle of 40 to 60 degrees with respect thereto, said stays in each group being positioned an an angle of 50 to 60 degrees with respect to each other, said stays of each group being disposed in a range wherein a torque acting on each of said crank arms becomes a maximum after each of said crank arms

revolves to pass an upper dead point therefor, said chain gear being smaller in cross sectional area at a portion thereof corresponding in location to the position of the crank arms than at a portion thereof located between the stays in each group.

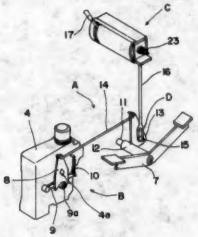


4,608,879

CHANGE SPEED OPERATING APPARATUS FOR A TRACTOR

Mikio Ishida; Shoso Ishimori, both of Sakai; Hagime Nakamura, Kawachinagano, and Kenzo Ushiro, Sakai, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Sep. 12, 1984, Ser. No. 649,590
Claims priority, application Japan, May 18, 1984, 59-73392
Int. Cl.[4] G05G *1/14, 5/16, 11/00*
U.S. Cl. 74—474 **9 Claims**



1. A change speed operating apparatus for a tractor comprising:

stepless change speed means;

pedal means operatively connected to said change speed means for operating said change speed means;

spring means for normally spring-loading said change speed means to a neutral position;

speed setting means for setting said pedal means at selective operative positions thereof for permitting said stepless change speed means to be operated by said pedal means in a speed increasing direction from the lowest set speed position determined by each said operative position and for preventing said stepless change speed means for being operated by said pedal means in a speed decreasing direction from said speed position;

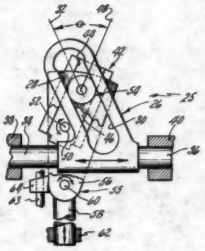
friction lock means positioned selectively for frictionally locking said speed setting means at said operative positons and for releasing said speed setting means from said operative positions to permit said stepless change speed means to be freely operated by said pedal means.

4,608,880

PUSH PULL MULTIPLIER LINKAGE

Andrew Gahura, Colebrook, and Graham M. Platt, Avon, both of Conn., assignors to Chandler Evans Inc, West Hartford, Conn.

Filed Nov. 5, 1984, Ser. No. 667,992
Int. Cl.[4] G05G *11/00*; F02C *9/28*
U.S. Cl. 74—479 **7 Claims**



1. A mechanical multiplier comprising:

a housing;

a first track member having a first track located in the housing;

first means for mounting the first track member for translation;

a first displacement member connected to the first track member;

a second track member having a second track located in the housing adjacent the first track member;

second means for mounting the second track member for pivoting movement about an axis;

a follower assembly operatively interconnecting the first and second track members and received within the tracks thereof;

a second displacement member connected to the follower assembly; and

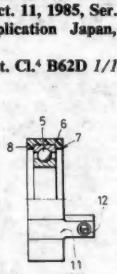
third means for mounting the second displacement member for movement transverse to the direction of translation of the first track member.

4,608,881

LOWER BEARING FIXING DEVICE FOR A STEERING MAIN SHAFT OF A STEERING SYSTEM IN AUTOMOTIVE VEHICLES

Tsuyoshi Tanoue, Okazaki, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 461,194, Jan. 26, 1983, abandoned. This application Oct. 11, 1985, Ser. No. 786,707
Claims priority, application Japan, Jan. 27, 1982, 57-010423[U]
Int. Cl.[4] B62D *1/16*
U.S. Cl. 74—492 **5 Claims**



1. In a steering system of an automotive vehicle which includes a steering main shaft inserted into a column tube, a lower tube attached to the lower end of said column tube and

a lower bearing having an inner race and an outer race and provided at the lower of end said steering main shaft, a device for fixing the lower bearing of the steering main shaft to the lower tube comprising:

a. a bearing retainer attached to the outer periphery of the lower bearing, said retainer including at least one integrally-formed, elongated arm axially projecting from a portion of said retainer;

b. at least one nut fitting into the end of said arm remote from said bearing retainer so as to universally incline relative to said arm, the outer periphery of said nut being spherically shaped; and

c. at least one axially-elongated hole formed through said lower tube at a position opposed to said nut and adapted to receive at least one bolt.

4,608,882

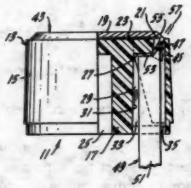
KNOB WITH DECORATIVE END CAP

Robert K. Howie, Jr., Decatur, Ill., assignor to The Grigoleit Company, Decatur, Ill.

Division of Ser. No. 439,330, Nov. 5, 1982, abandoned. This application Aug. 9, 1984, Ser. No. 639,230

Int. Cl.⁴ G05G *1/02*

U.S. Cl. 74—548 **8 Claims**



1. A cylindrical knob for installation on a shaft, the knob including:

a plastic tubular body having an outer sleeve, an integral inner core, a cap receiving end and an opposite end, with the inner core being spaced from the outer sleeve at the cap receiving end of the body to form an annular slot,

the inner core having a cap supporting surface located adjacent the annular slot and a shaft receiving socket located at the opposite end of the tubular body,

an undercut surface formed in said inner core adjacent the cap supporting surface and accessible from the annular slot,

at least one passage extending from the socket end of the tubular body to the annular slot, and

a disc-shaped end cap having a depending annular skirt positioned on the cap supporting surface with the skirt located in the annular slot, the skirt being deformed against the undercut surface of the inner core at spaced locations to fasten the end cap to the tubular body.

4,608,883

TORSION DAMPING MECHANISM

Warren G. Bopp, Farmington Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

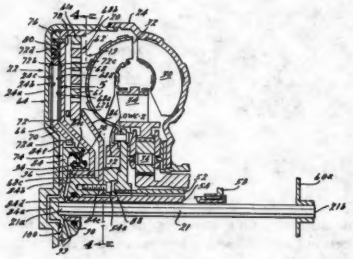
Filed Jul. 16, 1984, Ser. No. 631,363

Int. Cl.⁴ F16D *3/80, 3/52;* F16F *15/10*

U.S. Cl. 74—574 **12 Claims**

1. A torsional damping mechanism including resilient means and dampening means connected in parallel with each other and adapted to be serially connected between input and output drives of a driveline; the resilient means for transmitting driveline torque between the drives and operative to flex and thereby isolate driveline torsionals; the dampening means including first and second assemblies respectively adapted for driving connection with the input and output drives; the assemblies mounted for relative to-and-fro rotation about a common axis in response to relative to-and-fro rotation of the drives effected by flexing of the resilient means and disposed for clutching coaction therebetween to dampen the driveline torsionals in response to flexing of the resilient means; the improvement comprising:

lost motion means operative over the torque range of the driveline and disposed between said output drive and said



second assembly for allowing minor relative to-and-fro rotation therebetween without corresponding relative to-and-fro rotation between said first and second assemblies effected by flexing of the resilient means, thereby allowing minor flexing of the resilient means without clutching coaction and dampening by the dampening means.

4,608,884

APPARATUS FOR DRIVING TWO AXES OF THE HAND ELEMENT OF AN INDUSTRIAL ROBOT

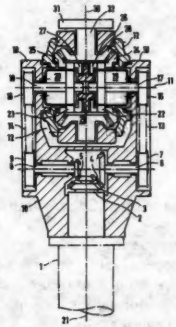
Hasso Beyer, Augsburg, Fed. Rep. of Germany, assignor to EKE Robotersysteme GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 28, 1983, Ser. No. 518,258

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1982, 3228945

Int. Cl.⁴ F16H *1/22*

U.S. Cl. 74—665 B **16 Claims**



1. In an apparatus for driving elements rotatable about a pair of axes of a hand element of an industrial robot of the type including a first casing positioned at the end of a boom of the robot, said first casing being adapted to be rotated around a first axis extending at a right angle to the boom axis, said first casing supporting a flange adapted to be rotated around a second axis extending at a right angel to the first axis; two driving shafts extending through the boom; and a pair of reduction gears driven by said driving shafts by means of respective bevel gears arranged in a second casing, rotation of the reduction gears causing rotation around the two axes, the improvement wherein:

said reduction gears are sealed within said first casing are located within the center thereof and include power take-off parts which are rotatably supported by said first casing and extend coaxially toward each other along said first axis, each of said power take-off parts supporting a further bevel gear;

said first casing is rotatably supported on the end of said boom for rotation around said first axis; and

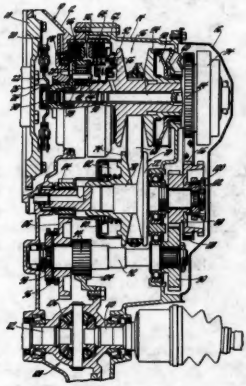
said further bevel gears are engaged with an additional bevel gear supported by said first casing for rotation about said second axis, said additional bevel gear being connected with said flange.

4,608,885

MULTI-RANGE CONTINUOUSLY VARIABLE POWER TRANSMISSION

Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 9, 1983, Ser. No. 530,548
Int. Cl.⁴ F16H *37/00*
U.S. Cl. 74—689 **2 Claims**



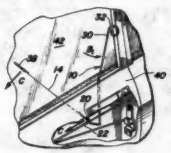
2. A continuously variable power transmission for a vehicle comprising: input means for receiving input drive; output means for delivering a drive; gear means having a low gear ratio and a high gear ratio drivingly connected with the output means; variable ratio and pulley belt means having a first adjustable pulley connected to the input means and a second adjustable pulley; first mechanical clutch means selectively connecting the second adjustable pulley to said output means through said low gear ratio of said gear means; second mechanical clutch means for selectively connecting said second adjustable pulley to said output means through said high gear ratio of said gear means; chain drive means drivingly connected to said output means through said high gear ratio; and selectively engageable transition clutch means for selectively connecting said input means to said chain drive means during the interchange of said first and second mechanical clutch means, said variable ratio pulley and belt means being selectively controlled from an underdrive ratio to an overdrive ratio during an output speed increase when either of said first clutch means or said second clutch means is engaged, and being controlled from an overdrive ratio to an underdrive ratio during increasing output speeds when the transistion clutch is engaged and the first and second mechanical clutch means are disengaged.

4,608,886

KEYLESS DOOR UNLOCKING APPARATUS FOR AUTOMOBILES

Ron Bolton, 1038 N. Tustin Ave., Ste. 710, Orange, Calif. 92667

Filed Oct. 7, 1985, Ser. No. 785,238
Int. Cl.⁴ E05B *63/00*
U.S. Cl. 81—15.9 **13 Claims**



1. Apparatus for the keyless unlocking from the outside of doors of automobiles having an internal door lock linkage which moves in a generally horizontal direction when the door is locked and unlocked, said apparatus comprising:

a. An elongate, slender rod sized to slip downwardly into an automobile door along the outside of the raised door window;

b. gripping means connected to a lower end of the rod and adapted for engaging and releasably griping said horizontally movable door lock linkage, said gripping means also being sized to slip downwardly into the automobile door along the outside of the door window; and

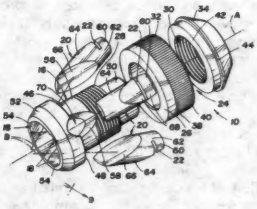
c. means for pulling from the outside of the door the gripping means in a generally horizontal direction when the gripping means engages and grips said door lock linkage to thereby pull the door lock linkage in the horizontal direction causing the locked door to unlock.

4,608,887

ADJUSTABLE SOCKET INCLUDING ROTATABLE ADJUSTER

David S. Colvin, 23933 Haynes, Farmington Hills, Mich. 48018

Filed Apr. 1, 1985, Ser. No. 718,217
Int. Cl.⁴ B25B *13/18*
U.S. Cl. 81—128 **19 Claims**



1. An adjustable socket comprising: a driver that is rotatively driven about a central axis thereof; said driver having a plurality of inclined slideways each of which has inner and outer slideway surfaces extending parallel to each other with both radial and axial components with respect to the central axis; a plurality of jaws each of which has inner and outer parallel jaw surfaces; said jaws being respectively mounted by slidable engagement of the inner and outer parallel surfaces thereof with the inner and outer parallel slideway surfaces of the slideways of the driver for inward and outward movement along with concomitant axial movement with respect to the central axis; each jaw having a slot that opens outwardly away from the central axis; an adjuster including an annular flange that projects inwardly with respect to the central axis and is slidably received within the jaw slots; mating helical surfaces

that support the adjuster on the driver for axial adjusting rotation that moves the jaws axially and concomitantly inwardly and outwardly along the inner and outer slideway surfaces for size adjustment between open and closed positions; and the annular flange being located along the axial extent of the slideways of the driver with the jaws in the closed position.

4,608,888

PLIER TYPE TOOL WITH MOTION COMPELLING MECHANISM

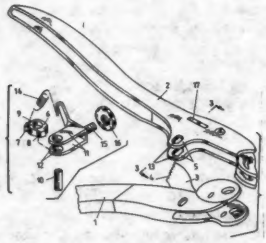
Reiner Rommel, Moldaustrasse 6, 3570 Stadt Allendorf, Fed. Rep. of Germany

Filed Mar. 27, 1985, Ser. No. 716,483

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1984, 3411459

Int. Cl.[4] B25B *7/00*

U.S. Cl. 81—313 **2 Claims**



1. A plier type tool including a pair of gripping levers pivotably connected together and a motion compelling mechanism connected to said gripping levers for requiring the gripping levers to pivot toward each other to a predetermined final closed position before the levers can be moved apart, the improvement therein of:

said motion compelling mechanism comprising a toothed segment rigidly mounted to one of said gripping levers including a series of ratchet teeth with the toothed segment oriented such that the series of teeth extend in a direction from one gripping lever toward the other gripping lever,

a pawl assembly adjustably mounted to the other of said gripping levers, said pawl assembly including a pawl support yoke, a pawl pivotably supported in said pawl support yoke at a position for engaging the ratchet teeth of said one gripping lever and preventing movement of the gripping levers apart from each other until the pawl has traversed all of said ratchet teeth, and spring means extending between and in engagement with said pawl and said pawl support yoke for biasing said pawl to a predetermined position, and

pawl position adjustment means mounted to said other gripping lever for moving said pawl support yoke toward and away from said one gripping lever in directions corresponding to the orientation of toothed segment and said said ratchet teeth,

whereby the predetermined final closed position of the gripping levers can be adjusted by said pawl position adjustment means.

4,608,889

LATHE FOR CUTTING WOODEN SPINDLES

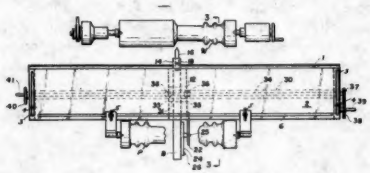
James Kollar, 622 Elizabeth St., Bridgeville, Pa. 15017

Filed Jun. 28, 1985, Ser. No. 749,677

Int. Cl.[4] B23B *3/28*

U.S. Cl. 82—14 R **3 Claims**

1. A lathe for cutting rotating spindles of soft material, such as wood and soft metals, comprising a frame, a flat rectangular lid mounted on said frame and serving as a pattern board supporting a pattern spindle, said pattern board having end slots for adjustably moving the pattern board in its plane towards or away from a rotating work spindle, means for adjustably mounting said pattern spindle on said pattern board, a tool carrying support at right angles to said pattern spindle, lever means for selectively moving said tool carrying support



towards or away from said work sprindle, a pattern follower mounted on said support for following the contour of said pattern sprindle under the action of said lever means, and carriage means mounted on said frame for moving said tool cutting support longitudinally of and parallel to the axis of said work and said pattern spindle.

4,608,890

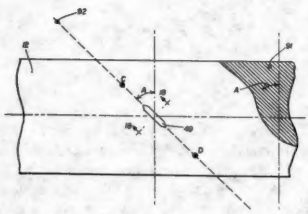
METHOD OF CUTTING ELASTOMERIC MATERIAL

Donald O. Still, Akron; Hubert T. Hovance, Ravenna, and George J. Burley, Clinton, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 493,088, May 9, 1983, Pat. No. 4,572,046. This application Jul. 23, 1984, Ser. No. 633,550

Int. Cl.[4] B26D *1/00, 3/00*

U.S. Cl. 83—49 **1 Claim**



1. A method for severing a length of elastomeric material having two outer sides and having reinforcing cords using a knife means having a notch therein, comprising the steps of:

a. pivotally plunging said knife means into said length of elastomeric material at a point approximately half way between the edges of said length thereby creating an edge;

b. engaging said edge of said length of elastomeric material with said notch;

c. displacing said knife means through said length of elastomeric material in a first direction through the first outer side of said length of elastomeric material;

d. replunging said knife means into said length of elastomeric material at a point proximate to said first plunge; and

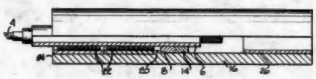
e. displacing said knife means through said length of elastomeric material in a second direction through the second outer side of said length of elastomeric material.

4,608,891

METHOD AND APPARATUS FOR CUTTING A PATTERN IN MATERIAL

Thomas M. Frisby, Bellvue, and Gordon L. Brooks, Fort Collins, both of Colo., assignors to ESAB North America, Incorporated, Fort Collins, Colo., a part interest

Filed Jul. 31, 1984, Ser. No. 636,176
Int. Cl.[4] D06H 7/00; G06F 15/46
U.S. Cl. 83—56 4 Claims



1. A method for use in cutting a pattern in a material comprising:

supporting the material in which a pattern is to be cut on a surface and at a predetermined location;

providing a cutting instrument having a longitudinal axis about which said cutting instrument rotates;

providing a holder means and a first bearing means;

positioning said first bearing means within said holder means;

mounting said cutting instrument within said first bearing means to facilitate rotation of said cutting instrument relative to said first bearing means;

providing a housing means and a second bearing means;

positioning said second bearing means within and along the longitudinal extent of said housing means;

locating portions of said holder means within said housing means;

contacting portions of the longitudinal extent of said holder means with said second bearing means for a distance that facilitates relative longitudinal movement between said holder means and said housing means;

maintaining said holder means free from contact with a driving means for causing rotation of said holder means during rotation of said holder means about a longitudinal axis;

moving said cutting instrument, said holder means and said housing means relative to the material in order to cut the pattern; and

changing the orientation of said cutting instrument relative to said material to be cut during the cutting operation by:

changing the direction of lateral movement of said housing means,

rotating the entire longitudinal extent of said holder means about said longitudinal axis and relative to said second bearing means and moving said holder means longitudinally relative to said housing means using said same second bearing means, and

pivoting said cutting instrument about contacting portions of said cutting instrument and said material to be cut, and about said longitudinal axis and relative to said first bearing means.

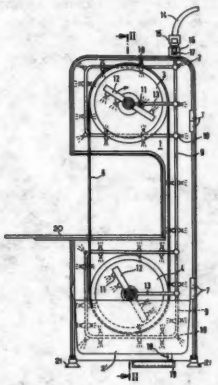
4,608,892

BAND SAW FOR FOODSTUFFS

Erwin Noizet, Frickenhausen, Fed. Rep. of Germany, assignor to REICH Spezialmaschinen GmbH, Nuertingen, Fed. Rep. of Germany

Filed Oct. 9, 1984, Ser. No. 658,747
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1983, 3338282
Int. Cl.[4] B26D 1/46, 7/08; A22B 5/20; A22C 17/00
U.S. Cl. 83—168 8 Claims

1. In a band saw for foodstuffs, especially meat and bones, having a housing, door means for closing said housing, a guide wheel operatively mounted in said housing for guiding a band saw blade, a positively driven drive wheel operatively mounted in said housing for driving said band saw blade, the improvement comprising cleaning nozzle means operatively mounted inside said housing, conduit means operatively connected to said cleaning nozzle means for supplying a cleaning liquid to said cleaning nozzle means, means connecting one group of nozzle means to said conduit means for directing



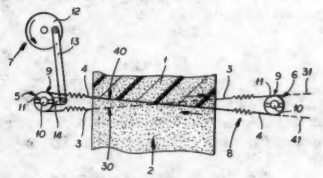
cleaning liquid jets toward said band saw blade, toward said guide wheel, and toward said drive wheel, and means mounting another group of nozzle means to said conduit means for directing cleaning liquid jets toward inner surfaces of said housing for cleaning said band saw, said guide and drive wheels and said inner surfaces inside said housing.

4,608,893

CUTTING APPARATUS FOR PLASTIC FOAM SOLIDS OR THE LIKE

Siegmar Hühne, Wesel, Fed. Rep. of Germany, assignor to Munchow und Huhne Maschinenbaugesellschaft mbH, Duisburg, Fed. Rep. of Germany

Filed Jan. 16, 1985, Ser. No. 692,038
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1984, 3401910; Feb. 15, 1984, 3405252
Int. Cl.[4] B26D 7/10, 1/547
U.S. Cl. 83—171 7 Claims



1. In a slab-cutting apparatus having a cutting wire system in which a plurality of cutting wires are attached substantially perpendicularly to and span two substantially parallel supporting rods spaced from each other so that a body to be cut can be passed through said cutting wires between said supporting rods, and an oscillating drive is operatively connected with said supporting rods so as to angularly oscillate said supporting rods in opposite senses and reciprocate said wires, said wires lying in two cutting wire planes and being attached eccentrically to the outer peripheries of said supporting rods, the improvement wherein said planes intersect between said supporting rods at an acute angle and each of said cutting wires is attached one side of one of said rods and to an opposite side of the outer of said rods, each of said supporting rods comprises

a core rod and two supporting half shells attached to said core rod.

4,608,894

ADHESIVE TAPE-CUTTING DEVICE

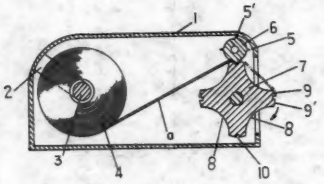
Ki S. Lee; Song J. Kim; Hyok Lee, and Kwang U. Lee, all of 901-6, Shiheung-dong, Guro-ku, Seoul, Rep. of Korea

Filed Feb. 7, 1984, Ser. No. 577,808

Claims priority, application Rep. of Korea, Feb. 9, 1983, 83-1158[U]

Int. Cl.[4] B23D *25/02*; B26D *1/62*

U.S. Cl. 83—322 **9 Claims**



1. An adhesive tape-cutting device comprising means for rotatably supporting a roll of tape so that said roll can be unrolled therefrom, means for unrolling tape from a roll of tape supported by said means for supporting, said means for unrolling including a plurality of projections which are progressively moved into contact with said tape at spaced intervals along said tape during movement of said means for unrolling to unroll tape from said roll, each of said projections including a pair of tape contacting parts spaced apart on the top face of the projection in the direction of movement of said projection by a concavity, and cutting means cooperating with said unrolling means for cutting the tape unrolled by said means for unrolling, said cutting means including a roller located adjacent said unrolling means, said roller having at least one cutter blade on its outer periphery which is adopted to project into the concavity in a projection of said unrolling means to cut the unrolled tape on said projection, wherein one of said tape contacting parts on each of said projections is made higher than the other contacting part thereon so that said one tape contacting part drivingly contacts the outer periphery of the roller of said cutting means to thereby automatically rotate the roller of said cutting means with movement of said unrolling means to move said cutter blade on said roller into a concavity of a projection and cut said tape.

4,608,895

ROTARY DIE CUTTING

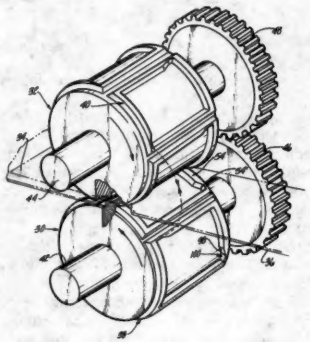
Jerry L. Bell, Pontiac; John D. Douma, Royal Oak; David P. Keinath, Ortonville, and Robert E. Moore, Auburn Hills, all of Mich., assignors to Bernal Rotary Systems, Inc., Troy, Mich.

Filed Mar. 14, 1984, Ser. No. 589,505

Int. Cl.[4] B31B *1/14*; B26D *1/62*

U.S. Cl. 83—345 **32 Claims**

1. Cylindrical dies which when rotating cut a web of material along a predetermined line of severance which subtends more than a quadrant which comprises: a pair of coating die cylinders of metal constructed and arranged to be journaled for rotation, at least one pair of coacting elongate severing blades with each blade of said pair disposed on one of said die cylinders, each severing blade comprising an elongate land projecting generally radially outwardly from the main body of its associated die cylinder, each said elongate land having an outer face and spaced apart and generally depending side faces defining a pair of spaced apart edges, said outer face having a width between said spaced apart edges of at least 0.010 of an inch, at least the portion of said side faces adjacent said outer face of each land of each severing blade being inclined toward each other at an acute included angle and each inclined to its associated outer face at an obtuse included angle, said coactng severing blades of each pair being constructed, arranged and positioned on their respective die cylinders such that during corotation of said pair of die cylinders the immediately adjacent edges of said coacting severing blades of each pair cut the web therebetween along a predetermined line of severance while the other edges of said coacting severing blades are on generally opposite sides of such line of severance, and at least one pair of coacting crossover sections each in one blade of said pair of severing blades, each said crossover section having



a narrow segment of said outer face with a maximum width of less than one-fourth of the maximum width of adjacent portions of said outer face of its land, said narrow segment of said outer face lying immediately adjacent the line of severance and extending at least to the point where the cutting action of said coacting severing blades transfers over from one edge to the other edge of said lands of said severing blades, whereby a pair of die cylinders can be shifted generally axially with respect to each other and/or shifted in rotational phase relationship with respect to each other such that an appropriate relationship between all of the severing blades thereof can be maintained for cutting the web along the predetermined line of severance.

4,608,896

METHOD OF AND DEVICE FOR THE MECHANICAL DIVISION OF UNITS OF CHEESE

Burkhard Topp, Am Buschufer 1, 5840 Schwerte 5, Fed. Rep. of Germany

Filed Nov. 1, 1984, Ser. No. 667,013

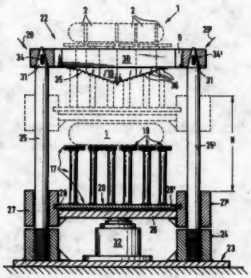
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1983, 3339801

Int. Cl.[4] B26D *1/03*

U.S. Cl. 83—431 **9 Claims**

1. An apparatus for dividing a unit of cheese, such as a medium-hard or hard type cheese in the form of a wheel or block of cheese, into smaller individual pieces, comprising a mechanical cutting device including a plurality of cutting edges, wherein the improvement comprises that said cutting device includes a rigid frame extending in a generally horizontal first plane, a plurality of knife-like blades each having one of said cutting edges and said blades are mounted in said frame, at least certain of said blades disposed in spaced parallel relation, said blades disposed in planes extending approximately perpendicular to said first plane, a support element, means to move said support element toward and relative to said frame between a first position located below said knife-like blades and a second position above said knife-like blades, said support element having a surface extending generally parallel to the first plane of said frame and divided into a plurality of separate support parts, each said support part having peripheral edges in the plane of said surface corresponding to the shape of one of the

individual pieces of cheese to be cut by said cutting device, adjacent said support parts being disposed in separate closely spaced relation and forming slots therebetween sufficient to afford passage through said slots of said blades during movement of said support element between the first and second positions, a base plate in generally parallel relation with and



spaced downwardly from said surface, and spaced upwardly extending supporting elements extending between and interconnecting each of said support parts and said base plate and said supporting elements being dimensioned in the upward direction so that the distance between said surface and said base plate is sufficient to receive said knife-like blades below said surface in the second position of said support element.

4,608,897

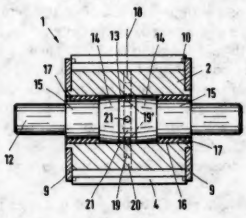
APPARATUS FOR SEVERING WORK PIECES

Alexander Winkler, Ernst-Kahn-Strasse 27, 6000 Frankfurt am Main 50, Fed. Rep. of Germany

Filed Mar. 25, 1985, Ser. No. 715,526

Int. Cl.[4] B26D *1/40*

U.S. Cl. 83—663 **2 Claims**



1. An apparatus for severing work pieces, especially paper or foils, comprising shaft means, a drum having a cylindrical bearing bore (**16**), means mounting said drum with its cylindrical bearing bore in a torsionally rigid yet rocking manner on said shaft means, at least one knife carried on a circumference of said drum, said shaft means (**12**) comprising a cylindrical middle part (**13**), a frustum-shaped part (**14**) adjoining each side of said middle part, a cylindrical shaft part (**15**) adjoining each frustum-shaped shaft part, and an elastic compensating member (**17**) on each cylindrical shaft part (**15**) for permitting a rocking movement of said drum relative to said shaft means.

4,608,898

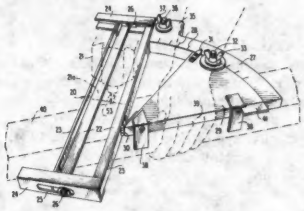
SAW GUIDE AND MITER APPARATUS

Michael J. Volk, 216 McKeon Rd., Severna Park, Md. 21146

Filed Dec. 11, 1984, Ser. No. 680,912

Int. Cl.[4] B27B *11/04*

U.S. Cl. 83—745 **17 Claims**



4. A unified saw guide and protractor assembly for use alone in a first mode and for use with coacting components in second and third use modes, said assembly comprising a dual width adjustable track guideway for a saber saw or the like, an arcuate angle graduated protractor arm having one end secured to one track of the guideway near one end of the guideway and projecting away from one side of the guideway, a protractor sector plate having an apex hingedly attached to said one track of the guideway in spaced relationship to said one end of the protractor arm, said sector plate having an arcuate edge closely adjacent to one edge of the protractor arm and being movable therealong on the axis of said hinge attachment, a pointer on the sector plate to coact with the angle graduations on the protractor arm, means to lock the sector plate and protractor arm releasably in selected adjusted positions, and a pair of spaced locator tabs on one side edge of the protractor sector plate which is remote from said guideway and extending below the bottom face of the sector plate and lying in a common plane perpendicular to the bottom face of the sector plate, the bottom faces of the sector plate, protractor arm and said guideway lying in a common flat plane.

4,608,899

CUTTING GUIDES FOR COVING

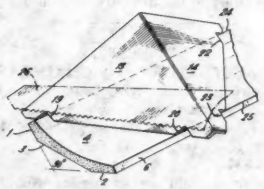
Ronald T. Twigger, Durrington, and Raymond Dodkin, Langford, both of England, assignors to Wondertex Limited, Feltham, England

Filed Apr. 8, 1985, Ser. No. 720,785

Claims priority, application United Kingdom, Apr. 25, 1984, 8410552; Aug. 8, 1984, 8420162; Feb. 8, 1985, 8503312

Int. Cl.[4] B27G *5/02*

U.S. Cl. 83—745 **17 Claims**



1. A guide for cutting coving to form mitre joints, the guide being adapted to be placed against the coving and comprising

means for engaging the coving so as to orientate the guide relative to the coving,

a guide face for sliding engagement by a cutter at the required angle of cut so as to guide the cutter while it cuts the coving,

the engaging means comprising at least one notch provided

in and towards one end of an edge of the guide which, in use, lies adjacent the coving, and

at least one other notch provided in the same edge between the first mentioned notch and the other end of the edge, said one notch and the other notch or one of said other notches being adapted to engage over opposite edges of the coving.

4,608,900

APPARATUS FOR CUTTING A PIECE AT A BEVEL

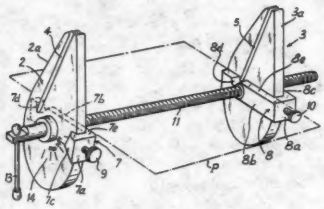
Claude Guiu, 1, rue Abbé Chanlon, Domois 21600 Longvic, and Régis Artru, Fontaine-les-Dijon, both of France, assignors to Claude Guiu, Longvic, France

Filed Aug. 2, 1984, Ser. No. 636,929

Claims priority, application France, Jan. 6, 1984, 84 00148

Int. Cl.[4] B27B *21/00*

U.S. Cl. 83—766 **26 Claims**



1. An apparatus for positioning a piece of material to be cut comprising:

(a) at least one and another guide elements, each said guide elements having an inner face and an outer face defined by a central area and a peripheral edge provided with a guide slot extending radially from the central area, the guide slot in one of the guide elements being aligned with respect to the guide slot in another of the guide elements along a common plane transverse to said guide element;

(b) means for connecting said guide elements in a parallel, spaced-apart relationship along a common transverse axis so as to allow a mutual displacement of one of the guide elements in a direction of another of the guide elements for tightening a piece to be cut between opposite inner faces of said guide elements;

(c) a support operably associated with each of said guide elements having an upper bearing surface, each said guide slot and each said bearing surface adapted to be oriented about said transverse axis relative to each other; and

(d) means for locking said guide elements with respect to said support so that each said bearing surface forms an angle, respectively, with respect to each said guide slot corresponding to the desired angle of cut.

4,608,901

SAFETY CHAIN FOR CHAIN SAWS

Gerald J. Doiron, Hyannis, Mass., assignor to Omark Industries, Inc., Portland, Oreg.

Filed Dec. 19, 1983, Ser. No. 563,211

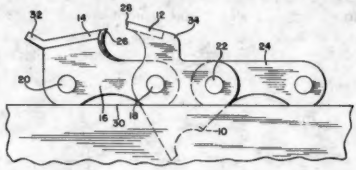
Int. Cl.[4] B27B *33/14*

U.S. Cl. 83—834 **7 Claims**

1. A chain for a chain saw having the usual cutter bar, the chain comprising in-line articulated driving links, and cutting tooth links, safety members on the driving links, cutting teeth on the cutting tooth links,

safety members having two positions with respect to the chain, including a first position in which the safety members guard the cutting teeth to inhibit cutting and a second position exposing the cutting teeth to permit cutting,

a pivot for each driver link adjacent the safety member, said driver links extending longitudinally of the chain from the area of the safety members, said pivot providing and axis about which a driving element may be rotated slightly between its first and second positions, and added pivots



joining other links in the chain, the pivots for the articulated chain being normally in line when the chain is under tension.

4,608,902

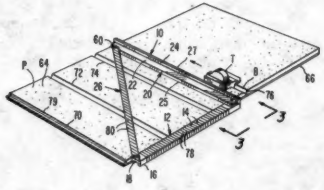
MEASURING AND CUTTING TOOL GUIDING DEVICE FOR USE IN THE FORMATION OF FIBER GLASS DUCTS

James H. Ivey, Levittown, Pa., assignor to Charles E. Long, Croyden and Charles S. Austin, Bensalem, both of, Pa.

Filed Oct. 24, 1984, Ser. No. 664,289

Int. Cl.[4] B26D *3/06*; B27G *13/14*

U.S. Cl. 83—875 **2 Claims**



1. A device for locating and guiding a tool used for cutting grooves in panels that are to be bent at the groove locations to form air-conditioning ducts or the like, said panels having flat faces in which said grooves are to be cut and having straight longitudinal edges, said device comprising a frame that includes:

(a) a base member in the form of an elongated, straight bar rigid from end to end thereof, said bar having a flat top surface and having a straight side surface, said bar being of a thickness permitting disposition of the same no higher than the plane of the face of the panel with said top surface coplanar with said face and said side surface in longitudinally slidably contacting relation with one of the longitudinal edges of the panel, the top surface of the bar having numerical indicia permanently applied thereto, any one of which is alignable with an edge of the groove last cut in the panel and when so aligned will represent the distance to the corresponding edge of the next groove that is to be cut; and

(b) an elongated, straight cutting tool guide member the length of which is greater than the transverse dimension of said panel, said guide member being rigidly connected to said base member and extending in perpendicular relation thereto wholly above the plane of the top surface of the base member in position to extend across the face of the panel, said guide member having a guide surface disposed in close proximity to the face of the panel when the top surface of the base member is coplanar with the face of the panel, for guiding the movement of a V-groove cutting tool across the face of the panel with said tool held in slidable contact with the guide surface, each indicium being spaced from said guide surface a distance such that with a selected indicium aligned with an edge of the V-

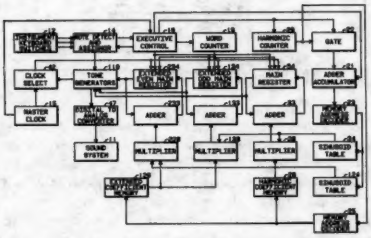
groove last cut and with a companion cutting tool disposed in slidable contact with said guide surface, the blade of the tool will be in position to form a V-groove having an edge corresponding to said edge of the groove last cut and spaced therefrom the exact distance signified by the selected indicium.

4,608,903

SINGLE SIDE-BAND HARMONIC EXTENSION IN A POLYPHONIC TONE SYNTHESIZER

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Sep. 19, 1984, Ser. No. 652,039
Int. Cl.[4] G10H *1/06, 7/00*
U.S. Cl. 84—1.01 **17 Claims**



14. In combination with a musical instrument in which a plurality of sets of points wherein each set of data points defines a waveform of a musical tone are stored in a a like plurality of waveshape memories and are transferred sequentially from each such waveshape memory to a means for producing musical waveshapes, apparatus for producing a musical tone having an extended number of harmonics comprising;

a first waveshape memory means for storing a first set of data points defining a waveform of a first augmented musical tone,

a second waveshape memory means for storing a second set of data points defining a waveform of a second augmented musical tone,

a third waveshape memory means for storing a third set of data points defining a waveform of a third musical tone,

a first means for producing a first musical tone at a preselected first fundamental frequency responsive to said third set of data points stored in said third waveshape memory means,

a second means for producing a second musical tone at a second fundamental frequency which is higher than said first fundamental frequency wherein said second musical tone is produced by a side-band modulation response to said first set of data points stored in said first waveshape memory means and to said second set of data points stored in said second waveshape memory means wherein said first set of data points corresponds to a modulation signal and said second set of data points corresponds to a carrier signal, and

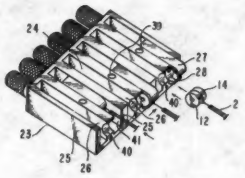
a combining means responsive to said first musical tone and to said second musical tone whereby said musical tone having an extended number of harmonics is produced.

4,608,904

TUNING SYSTEM FOR STRINGED MUSICAL INSTRUMENT

Ned Steinberger, New York, N.Y., assignor to Steinberger Sound Corporation, Brooklyn, N.Y.

Continuation of Ser. No. 386,326, Jun. 8, 1982, abandoned. This application May 20, 1985, Ser. No. 735,723
Int. Cl.[4] G10D *3/14*
U.S. Cl. 84—304 **12 Claims**



1. A tuning system for a stringed musical instrument, the instrument having a body, a neck extending from said body, and a plurality of strings extending over at least a portion of said body each said string having a tuning end and a fixed end, the system comprising:

a tuning ball fastened to the tuning end of each said string;

an anchor ball fastened to the fixed end of each said string;

means for securing the fixed end of each said string to the neck of said instrument, said securing means including a plurality of longitudinal anchor slots on the neck of said instrument, the fixed end of each of said strings passing lengthwise through one of said anchor slots, said slots each having an open top and a pair of sides, each pair of sides having ends, the distance between said sides being smaller than the diameter of said anchor ball for manually inserting said string laterally through said open top into said slot and for securing said anchor ball in said slot against the ends of said sides when tension is imparted to the tuning end of said string;

a tuning block mounted on the body of said instrument adjacent said tuning end of the strings, said block having an individual tuning channel aligned with each string;

a plurality of anchor members, one of said anchor members being positioned in each of said channels;

means for biasing each said anchor member toward said neck;

a cut-out in the end of said of said anchor members closest said tuning end of the string for slidable insertion of said tuning ball, said cut-out having an exit slot for permitting the string to protrude through said end of said anchor member;

means for controllably adjusting the position of each said anchor member in its corresponding channel for increasing or decreasing the tension in a string of said instrument without imparting any substantial torque to said string, each said string being in substantially parallel alignment with each adjacent string throughout the entire length thereof; and

bridge means mounted on said body of said instrument between said tuning block and said securing means.

4,608,905

TREMOLO APPARATUS FOR AN ELECTRIC GUITAR WITH TUNING FUNCTION

Youjiro Takabayashi, Hamamatsu, Japan, assignor to Nippon Gakki Co., Ltd., Shizuoka, Japan

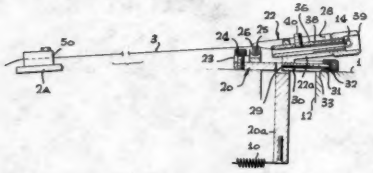
Filed Feb. 13, 1985, Ser. No. 701,122
Claims priority, application Japan, Feb. 25, 1984, 59-25244[U]
Int. Cl.[4] G10D *3/00*
U.S. Cl. 84—313 **10 Claims**

1. A tremolo apparatus with tuning function for a guitar having a body and a neck, said tremolo apparatus comprising:

a bridge base installed to the body in such a manner as to be tiltable upward and downward freely;

a plural number of octave tuning members provided on the bridge base with each of them corresponding to each of the strings, respectively, and in such a manner as to be movable in the stretching direction of the string for performing octave tuning;

a plural number of octave tuning screws which function to move and adjust the respective octave tuning members independently to each other in the stretching direction of the string;



a plural number of string holding members each of which is disposed in each of the octave tuning members in such a manner as to be movable in the stretching direction of the string, while holding one end of each of the strings;

a plural number of tensile force control mechanisms which serve to move and control the respective string holding members independently of each other in the stretching direction of the string; and

a balance spring for providing said bridge base with the balancing moment that works in a direction opposite to a direction along which a moment to tensile forces of the string works.

4,608,906

TREMOLO APPARATUS FOR AN ELECTRIC GUITAR

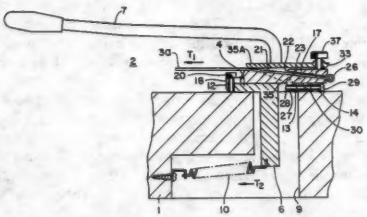
Youjiro Takabayashi, Hamamatsu, Japan, assignor to Nippon Gakki Co., Ltd., Shizuoka, Japan

Filed Jul. 2, 1985, Ser. No. 751,629

Claims priority, application Japan, Jul. 6, 1984, 59-101429; Sep. 5, 1984, 59-133969; Sep. 5, 1984, 59-133970

Int. Cl.[4] G10D *3/00*

U.S. Cl. 84—313 **14 Claims**



1. A tremolo unit mechanism for electric guitar comprising:

a bridge base mounted on a guitar body, said bridge base being pivotally movable up and down with its front edge serving as fulcrum for such pivotal motion;

bridge bodies respectively provided on said bridge base by corresponding to respective strings, each one of said bridge bodies having a string inserting hole which, formed in the rear end portion of the bridge body, opens at its one end to the surface on the upper side while at the other end to the back of the bridge body;

octave tuning screws which move said bridge bodies in the length wise direction of the strings to effect harmonic tuning;

rocker arms mounted on the bridge bodies in a manner to pivotally move in a vertical direction, said rocker arms covering the upper surface of said bridge bodies and pressing the front end portions the strings, which are led out from said string inserting holes, onto the upper surfaces of the front end portion of the bridge bodies;

locking screws screwed into the rear end portion of said rocker arms, the front ends of the locking screws coming into contact with the top surfaces of the rear end portions of said bridge bodies; and

balancing springs for providing said bridge base with balancing moment in a direction opposite to a moment derived from the tensile force of the strings.

4,608,907

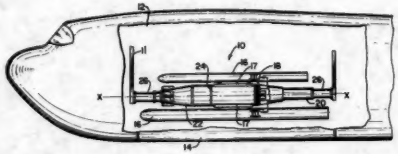
ROTARY LAUNCHER AND HYDRAULIC EJECTOR SYSTEM

Larry G. Ellis, and Gabor L. Radi, both of Jamestown, N. Dak., assignors to Western Gear Corporation, Jamestown, N. Dak.

Filed Apr. 28, 1983, Ser. No. 489,644

Int. Cl.[4] F41F *3/06*; B64D *1/04*

U.S. Cl. 89—1.815 **14 Claims**



8. In a stores launcher adapted for use in an aircraft and carrying a plurality of stores which selectively move into a launch position for sequential airborne launching thereof after selective release of retaining means cooperable with said stores, respectively, the improvement comprising: ejector means having a first portion cooperable only with the retaining means when an individual store is positioned in such launch position to release such positioned store and a second portion to eject such released store from the aircraft.

4,608,908

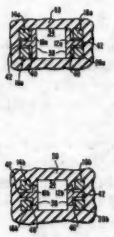
ELECTROMAGNETIC LAUNCHERS WITH IMPROVED RAIL CONFIGURATIONS

Richard J. Carlson, Santa Clara, Calif., and George A. Kemeny, Wilkins Township, Allegheny County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 17, 1984, Ser. No. 571,609

Int. Cl.[4] F41F *1/02*

U.S. Cl. 89—8 **11 Claims**



1. A method of accelerating projectiles in a parallel rail electromagnetic projectile launcher comprising the steps of:

causing current flow through a pair of generally parallel projectile launching rails and through a means for conducting current between the rails and for propelling a projectile along the rails; and

increasing the inductance gradient toward a muzzle end of the rails by decreasing the rail height from a breech end to said muzzle end, thereby increasing an accelerating force on said projectile, for a given current magnitude as said projectile travels toward said muzzle end, said force resulting from the interaction of a magnetic field produced by current flowing within said rails and current flowing within said means for conducting current.

4,608,909

INTERCHANGEABLE BARREL FOR SMALL ARMS

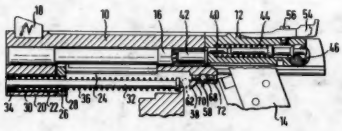
Franz-Josef Peters, Senefelderstrasse 19, D-4790 Paderborn 1, Fed. Rep. of Germany

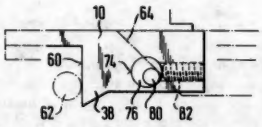
Filed May 17, 1983, Ser. No. 495,258

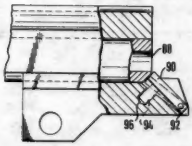
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1982, 3243241

Int. Cl.⁴ F41C *21/22*

U.S. Cl. 89—196 **5 Claims**







1. A small arm having an interchangeable sub-caliber barrel comprising:

a housing;

a sliding breechblock slidably mounted on the housing;

an arresting lever bolt extending through said housing in a direction transverse to the length of the housing;

an interchangeable barrel element having a sub-caliber barrel bore and a downwardly protruding shoulder at a rear portion thereof, said shoulder having a frontal surface abutting against the arresting lever bolt;

a rearwardly and downwardly inclined guide surface formed on the housing near the rear portion of the barrel; and

an adjustable spreading element on the interchangeable barrel adjustably resting against the rearwardly-inclined guide surface of the housing for fixedly clamping the barrel in the housing by exerting a spreading force between the guide surface and the arresting lever bolt.

4,608,910

COMPRESSED FLUID SAVING DEVICE

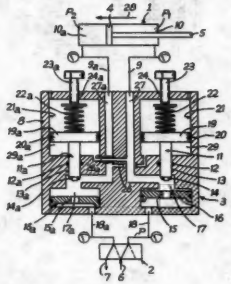
Yves Levenez, Vaux-le-Penil, and André Legris, Rennes, both of France, assignors to Legris, Rennes, France

Continuation of Ser. No. 475,483, Mar. 15, 1983, abandoned. This application Jun. 12, 1985, Ser. No. 743,887

Claims priority, application France, Mar. 19, 1982, 82 05042; Mar. 3, 1983, 83 03513

Int. Cl.⁴ F15B *15/22*

U.S. Cl. 91—409 **27 Claims**



1. Compressed fluid saving device permitting regulation of the pressure of driving fluid produced by a pressurized-fluid supply system in a pressurized-fluid-using apparatus, such as a jack having a chamber and a movable jack member mounted in the chamber for movement and dividing the chamber into a pair of secondary chambers adapted to be selectively pressurized with driving fluid for moving said movable jack member through two strokes, said regulation being to a pressure below that produced by the supply system, the device comprising:

valve members movable in response to the pressure in the secondary chambers for selectively supplying driving fluid under pressure to the secondary chambers to move the movable jack member in one or the other stroke thereof; and

movable seat members for cooperating with said valve members to permit full flow of fluid out of the secondary chamber not selected for supply with driving fluid under pressure during both strokes of the movable jack member and to stop the flow of driving fluid under pressure to the secondary chamber selected for supply with driving fluid under pressure before the end or at the end of both strokes of the movable jack member.

4,608,911

LOCKING CIRCUIT FOR HYDRAULIC SYSTEMS

Stephen D. Johnson, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Jan. 31, 1985, Ser. No. 697,021

Int. Cl.⁴ F15B *13/04*

U.S. Cl. 91—445 **7 Claims**

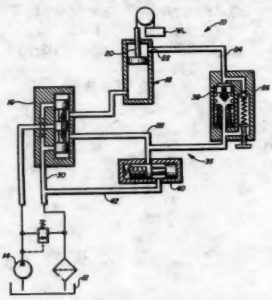
1. In an hydraulic system including a fluid tank, pump means for pressurizing fluid from the tank, control valve means for directing pressurized fluid flow, and a work fluid actuator operatively joined to said valve means and having a fluid return port, the improvement comprising:

pressure relief valve means downstream of said return port;

spring-urged normally open check valve means in parallel flow relation with said relief valve means, said check valve means closing in response to a fluid pressure differential across the check valve means acting in opposition to said spring-urging of said check valve means; and

selectively operable pressure release means downstream of said check valve means in parallel flow relation with said control valve means with respect to said tank,

whereby activation of said pressure release means causes closure of said check valve means preventing fluid flow



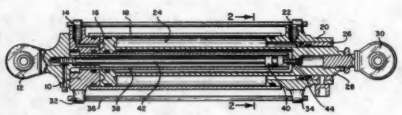
from the return port of said actuator through said check valve means and thereby locking the actuator in a fixed position.

4,608,912

LINEAR HYDRAULIC ACTUATOR HAVING BALLISTIC TOLERANT

Carlos A. Navarette, Canoga Park, Calif., assignor to Allied Corporation, Morristown, N.J.

Filed Nov. 5, 1984, Ser. No. 668,064
Int. Cl.[4] F01B *1/00*; F16J *11/04*
U.S. Cl. 92—5 R **9 Claims**



1. A linear hydraulic actuator having ballistic tolerant properties connected to a source of fluid under pressure including a cylinder having a barrel portion and first and second end portions, a piston in said cylinder, a rod movable in said cylinder carrying said piston and passing through at least one of said end portions, and fluid conduit means connected to said cylinder on opposite sides of said piston;

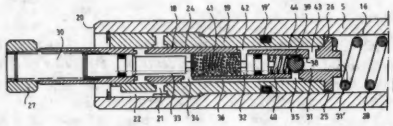
characterized in that at least a part of said barrel portion is a cylindrical sleeve formed of a composite material which contains said fluid under pressure and which does not petal on impact, said composite material being radially spaced from said rod and plated on its internal surface with a hard coating to permit repeated translation of said piston thereagainst, and strong metal means spaced radially a significant distance from said cylindrical sleeve is provided extending between said end portions for carrying the axial loads on said barrel such that a ballistic impact on said strong metal means does not necessarily result in damage to said composite cylindrical sleeve.

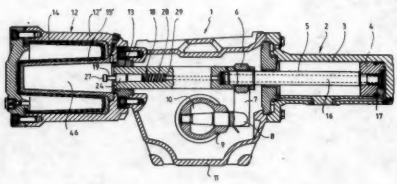
4,608,913

ACTUATOR WITH PNEUMATIC ENERGY ACCUMULATOR MORE ESPECIALLY FOR COCK VALVES

Maurice Bonafous, Oloron, France, assignor to Applications Mecaniques et Robinetterie Industrielle A.M.R.I., Bagnolet, France

Filed May 25, 1984, Ser. No. 614,458
Claims priority, application France, Jun. 6, 1983, 83 09345
Int. Cl.[4] F16K *31/124*
U.S. Cl. 92—134 **10 Claims**





1. An actuator for driving a valve shaft comprising:

a frame;

a cylinder connected to the frame;

piston means supported in the cylinder for reciprocating movement therein and forming, with the cylinder, a working chamber for receiving a pressurized fluid;

accumulator means connected to the frame and forming an accumulation chamber;

cylinder rod means attached to the piston and extending therefrom, the cylinder rod means including a back end portion supported for sliding movement into and out from the accumulation chamber, the cylinder rod means forming a through bore for conducting pressurized fluid between the working chamber and the accumulation chamber; and

a distributor supported by the cylinder rod means and extending into the through bore to control the flow of pressurized fluid therethrough, the distributor having an open position for conducting pressurized fluid between the working and accumulation chambers, and a closed position closing the through bore, the distributor including

(i) a first flow path for conducting fluid through the through bore, from the working chamber to the accumulation chamber,

(ii) a check valve located in the first flow path and having a first position closing the first flow path and a second position opening the first flow path, the check valve moving from the first position to the second position when the distributor is in its open position and fluid pressure in the accumulation chamber is below the fluid pressure in the working chamber by at least a preset amount,

(iii) a second flow path for conducting fluid through the through bore between the working chamber and the accumulation chamber when the distributor is open,

(iv) a throttling valve located in the second flow path to conduct a restricted fluid flow therethrough and gradually adjust the pressure in the accumulator chamber when the distributor is open and the check valve is closed, and

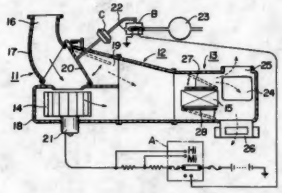
(v) means for moving the distributor between its open and closed positions.

4,608,914

INTAKE UNIT

Yukio Shimada, Ebina; Shizuo Kato, Saitama, and Katsuichiro Tajima, Sano, all of Japan, assignors to Nihon Radiator Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 536,668, Sep. 28, 1983, abandoned. This application Jun. 17, 1985, Ser. No. 745,072
Claims priority, application Japan, Sep. 30, 1982, 57-147244
Int. Cl.[4] B60H *1/26*
U.S. Cl. 98—2.06 8 Claims



1. An automobile air conditioner comprising a heater unit incorporating a heating core;

an air intake unit having a blower section incorporating a blower and an intake section incorporating at least an ambient air inlet;

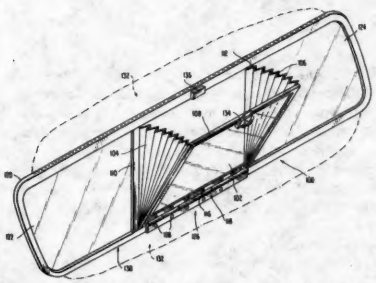
and conduit means connecting said air intake section with said heater unit which includes a bypass section for bypassing said blower and a bypass door for opening and closing said bypass section; said bypass door being closed when said blower is operating and being capable of opening said bypass only while said blower is not in operation.

4,608,915

ATTACHMENT FOR MOTOR VEHICLES WITH REAR WINDOWS

Richard Chatlos, Johnstown, Pa., assignor to Air-O-Scoop Corporation, Johnstown, Pa.

Continuation-in-part of Ser. No. 514,198, Jul. 15, 1983, Pat. No. 4,503,756, which is a continuation-in-part of Ser. No. 377,564, May 12, 1982, Pat. No. 4,393,753, which is a continuation of Ser. No. 194,224, Oct. 6, 1980, Pat. No. 4,346,648, which is a continuation-in-part of Ser. No. 118,444, Feb. 4, 1980, Pat. No. 4,326,451. This application Feb. 15, 1985, Ser. No. 702,137
Int. Cl.[4] B60H *1/26*
U.S. Cl. 98—2.12 6 Claims



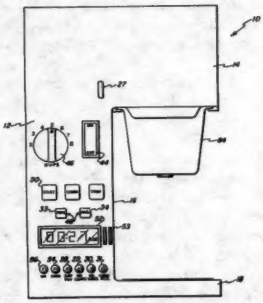
1. An air flow device for a closed motor vehicles or boat for positioning in the rear aperture thereof, comprising, in combination, (a) a window frame which is adapted to fit in said rear aperture, said window frame having a top frame member, a bottom frame member and two side frame members, thereby forming a window opening, and at least one pane member is positioned within said window frame so as to block a portion of said window opening, said window frame having an outer edge and an inner edge, and the inner edge of said window frame not contacting said window frame being vertical, and (b) an air flow unit positioned in said window frame, said air flow unit comprising (i) a plate that is transparent in at least the central region thereof, (ii) means for attaching said air flow device to said window frame, said attachment means including pivot means which is pivotally attached to the bottom portion of said plate and to the bottom frame member of said window frame, and (iii) two vertical side members, one side of each of said side members being attached to one of said vertical members, the other side of each of said members being attached to one end of said plate, each of said side members being pleated in the vertical direction, said pleats decreasing in width in the vertical direction so as to form a point at the lower edge of said vertical member, and the upper edge of said vertical members being straight, when said plate is in an upright position so as to close said rear aperture, the pleats of said vertical side members are compressed, and when said plate is in an inwardly pivoted position so as to extend upwardly and inwardly from said rear aperture, thereby forming a gap between the top of said plate and the vertical plane of said rear aperture, the pleats of said vertical side members are expanded, thereby preventing lateral air flow into said vehicle or boat.

4,608,916

BEVERAGE BREWING APPARATUS

Franklin H. Becker; Marcia R. Becker, both of 7480 NW. 35th St., Lauderhill, Fla. 33319, and Dane R. Hancock, 516 Bontona Ave., Ft. Lauderdale, Fla. 33301

Filed Dec. 3, 1984, Ser. No. 677,926
Int. Cl.[4] A47J *31/00*
U.S. Cl. 99—283 4 Claims



1. A beverage brewing apparatus comprising:

a housing,

a filter means connected to said housing,

a beverage making material holding means connected to said housing,

a beverage making material quantity selector and transfer means for automatically measuring and transferring a selected quantity of beverage making material from said material holding means to said filter means, said selector and means connected between said material holding means and said filter means for transferring beverage making material to said filter means,

a liquid holding means connected to said housing,

a heating means connected to said housing,

a liquid quantity selector, heater and transfer means for automatically measuring, heating and transferring a selected quantity of liquid from said liquid holding means to said beverage making material in said filter means, said

liquid selector, heating and transfer means connected between said liquid holding means and said filter, said liquid transfer means including means so constructed and arranged and so structurally interrelated with said beverage making material transfer means for effectively controlling the amount of beverage making material conveyed from said holding means to said filter means, and

an outlet means connected to said housing and adjacent said filter means to direct the brewed liquid after passing through said filter into a cup or pot.

4,608,917

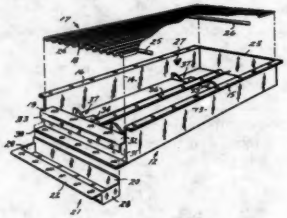
STOVE TOP BROILER COMBINATION

Paul G. Faaborg, 5580 Wood Valley Dr., Haslett, Mich. 48840

Filed Apr. 1, 1985, Ser. No. 718,350

Int. Cl.[4] A47J *37/06*

U.S. Cl. 99—340 **4 Claims**



1. A combination structure selectively supporting a broiler and a griddle comprising:

an open-topped and open-bottomed rectangular base forming an upper level parallel to a lower rest level of said base;

a downturned drain flange across one end of said base at an elevation below the upper level of said base;

a pair of spaced-apart notched supports spanning said open bottom;

a plurality of elongate structural angles having upturned legs for support of debris and chips for burning and flavor additives nestable and removable from the notches in said supports and said legs of said angles forming horizontal spaced-apart grooved rails terminating substantially against walls of said base;

a one-piece selectively removable broiler surface having plural adjacent parallel elongate spaced-apart smaller structural angles, each of said smaller structural angles having upturned legs, and above said first recited structural angles, and said smaller angles retained in a rigid pattern by support bars secured to the said plural smaller angles at the juncture of the said legs of said smaller angles;

brackets in said base supporting said broiler surface and selectively supportive of a griddle in a slant attitude downwardly toward said flange of said base; and

a drain trough having an upstanding rear splash flange insertable under said flange of said base where grease and debris reaching said flange of said base drains into said trough.

4,608,918

APPARATUS FOR MANUFACTURING SEALED SANDWICH STYLE BUNS

Takeshi Funabashi, 20-9, Nanzancho, and Shigeaki Funabashi, 55 Umezono, Hirojicho, both of Showa-ku, Nagoya-shi, Japan

Filed Jan. 15, 1985, Ser. No. 691,657

Int. Cl.[4] A21C *15/04*

U.S. Cl. 99—450.4 **4 Claims**

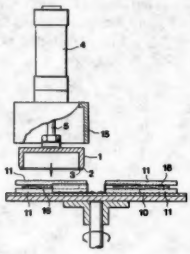
1. Apparatus for manufacturing sealed sandwich style buns of the type embodying opposed slices of bread enclosing an inner filling, comprising:

(a) a reciprocating cylinder;

(b) a cutting device attached to said cylinder for cutting off crusts of sliced bread, further including:

(i) a sharp blade in the form of a peripheral frame, and

(ii) an inner shoulder extending inwardly of said blade so as to engage the periphery of a sandwich being cut; and



(c) a rotatable table positioned beneath said cutting device, such that one-half of the table is disposed beneath said cutting device at any one time;

said cutting device upon reciprocation against a sandwich supported upon said table being adapted to simultaneously cut off the crusts on the four sides of the sandwich, while said inner shoulder presses the peripheries of the sandwich to seal together the opposed slices of bread.

4,608,919

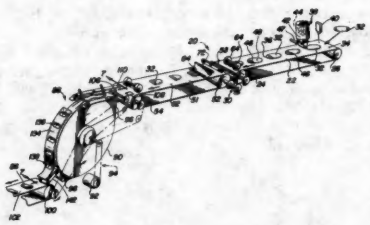
BURRITO MACHINE

Reed N. Prows, 19161 Aldora Dr., and William J. Nicholas, 2112 Camwood, both of Rowland Heights, Calif. 91748

Filed Nov. 1, 1984, Ser. No. 667,415

Int. Cl.[4] A21C *9/00, 11/00*

U.S. Cl. 99—450.6 **24 Claims**



1. A machine to form burritos from a flexible tortilla of a general diameter with first and second side portions, a leasing edge, a trailing edge, an upper surface, a lower surface, and filling material positioned on the upper surface adjacent teh leading edge, said machine including:

a belt moving in a predetermined direction having a tortilla thereon with burrito filling on the tortilla and the leading edge of the tortilla folded over the burrito filling, said belt having:

opposite side edges;

first and second ramps positioned to lift the first and second side portions of said tortilla as the tortilla moves with said belt, said first and second ramps extending along opposite sides of said belt and the tortilla extending beyond said sides of said belt for lifting thereby;

means to fold the lifted first and second side portions of said tortilla over the burrito filling as the tortilla moves with said belt including:

a first slide bar extending inwardly from said first ramp positioned to contact the first side portion to fold the first side portion over the filling; and

a second slide bar extending inwardly from said second ramp positioned to contact the second side portion after said first slide bar has contacted the first side portion to fold the second side protion over the filling; and

means to roll the tortilla so that its leading edge is covered by the trailing edge thereof.

4,608,920

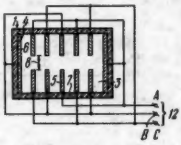
ELECTROPLASMOLYZER FOR PROCESSING VEGETABLE STOCK

Jury A. Scheglov, ulitsa Pryanishnikova, 5/3, kv. 80; Nikolai P. Koval, ulitsa Pryanishnikova, 5/2, kv. 89; Leonid A. Furer, ulitsa Aerodromnaya, 7/2, kv. 18; Sergei Y. Zargarian, ulitsa Chernyshevskogo, 76, kv. 14; Anatoly A. Skimbov, Beltsky pereulok, 2, kv. 2, all of Kishinev; Vladimir G. Belik, ulitsa Bogatyrskaya, 18, kv. 189; Boris N. Zharik, ulitsa Garmatnaya, 33/1, kv. 17, both of Kiev; Andrei Y. Papchenko, prospekt Mira, 24, kv. 72, Kishinev; Filipp G. Ryabinsky, ulitsa Parkovaya, 32, kv. 4, Nikolaev; Alexandr S. Sergeev, deceased, late of Simferopol, and by Galina A. Sergeeva, administrator, bulvar Lenina, 2a, kv. 25, Simferopol, all of U.S.S.R.

Filed May 3, 1983, Ser. No. 491,169

Int. Cl.[4] A23L *3/00*

U.S. Cl. 99—451 **14 Claims**



1. An electroplasmolyzer for processing vegetable stock, said electroplasmolyzer comprising:

a housing defining an inlet opening and an outlet opening;

an inner surface of said housing;

a three phase power supply;

a plurality of electrodes, each electrode of said plurality of electrodes including a terminal portion and a planar surface for contacting said vegetable stock being processed, said plurality of electrodes being distributed on the inner surface of said housing and being connected to said three phase power supply so that adjacent electrodes are connected to different phases of said three phase power supply; and

an unobstructed passageway extending through said housing, said passageway being defined adjacent to said terminal portions of said plurality of electrodes.

4,608,921

CHEESE MANUFACTURING METHOD AND APPARATUS

Angelo Mongiello, Sr., 1655-84th St., Brooklyn, N.Y. 11214

Filed Sep. 11, 1984, Ser. No. 649,548

Int. Cl.[4] A01J *25/00;* **A23C** *19/00*

U.S. Cl. 99—455 **34 Claims**

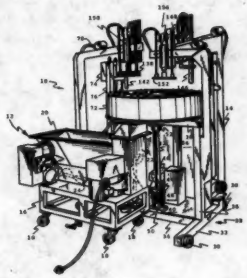
1. Apparatus for molding hot cheese, comprising:

(a) a plurality of mold means each for defining volume for receiving hot cheese and for defining open area through which cheese may be driven into said volume;

(b) feeder means having an output communicating with said open area for filling one of said mold means with hot cheese when said open area of said mold means is in communication with said output to form hot molded cheese;

(c) motion means for sequentially moving each of said open areas of said mold means into communication with said output in sequence;

(d) area increasing fin means disposed in each of said mold means for creating additional surface area in the hot molded cheese disposed in said mold means;



(e) cooling means for maintaining a coolant fluid in contact with said mold means; and

(f) ejector means for ejecting cooled cheese with said additional surface area from said mold means.

4,608,922

FRAMELESS HIGH PRESSURE PLATEN PRESS

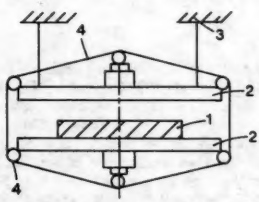
Andreas Pöhl, Haydnstrasse 5, 8077 Reichertshofen, Fed. Rep. of Germany

Filed May 10, 1985, Ser. No. 732,543

Claims priority, application Fed. Rep. of Germany, May 12, 1984, 3417712

Int. Cl.[4] B30B *15/00*

U.S. Cl. 100—264 **10 Claims**



1. A high pressure press, comprising: first and second opposed plates; wrapping means surrounding said plates; raising means between at least one of said plates and said wrapping means located on the geometric centerline of the plate, for exerting force on said wrapping means and forcing said plates toward each other.

4,608,923

POSTAL METER VALUE SELECTOR SEQUENCING SYSTEM

Arno Muller, Westport, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 4, 1984, Ser. No. 657,702

Int. Cl.[4] B41L *47/46*

U.S. Cl. 101—91 **7 Claims**

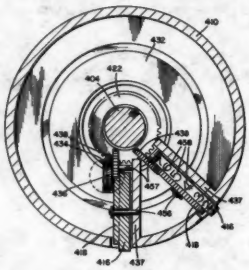
1. A postage meter for printing selected value amounts on a print receiving surface, comprising:

a rotatable print drum, a plurality of value print devices mounted within the print drum, said devices each having a plurality of value print elements and being selectively movable to align selected value print elements,

means for rotating said print drum to move said selected value print elements through a printing position to form an imprint on a said print receiving surface,

value selection means for selectively adjusting said value print devices one at a time to align selected said value print elements,

print device selection means for selectively associating said value selection means with respective value print devices by relative rotation, about the rotational axis of the print drum, of said print device selection means and said value print devices,



means for driving said value selection means and said print device selection means, and

control means for controlling said value selection means and said print device selection means in accordance with selected print values such that said value selection means is associated during each value setting cycle only with such value print devices (if any) which require adjustment to set the selected value amount such that said print device selection means is brought to said value print devices by relative rotation thereof about said rotational axis of the print drum in the direction that takes the shortest distance to bring the two into operative engagement.

4,608,924

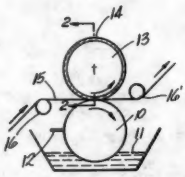
ELIMINATION OF INK SPLATTERING DUE TO STATIC FRICTION IN ROTOGRAVURE PRINTING

Robert G. Kessler, New Brighton, Minn., assignor to Champion International Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 506,851, Jun. 24, 1983, abandoned, which is a continuation of Ser. No. 352,112, Sep. 25, 1982, abandoned, which is a continuation of Ser. No. 185,174, Sep. 8, 1980, abandoned, which is a continuation-in-part of Ser. No. 927,174, Jul. 21, 1978, abandoned. This application Feb. 13, 1984, Ser. No. 578,984

Int. Cl.[4] B41F *9/00*

U.S. Cl. 101—170 **6 Claims**



1. A method for eliminating static-induced splattering of negatively charged ink in the printing of plastic films, said method comprising the steps of:

(a) providing a roller for frictionally engaging the film being printed, said roller being coated with a surface layer of a suitably durable polymeric substance which is more triboelectrically positive than the plastic film being printed, said surface layer of said polymeric substance being of a thickness which is at least about 0.035 pounds per 3,000 square feet;

(b) frictionally engaging said film and said coated roller to impart a negative static electric charge to said film; and

(c) thereafter printing said negatively charged film with said negatively charged ink.

4,608,925

SHEET TRANSFER CYLINDER IN SHEET-FED ROTARY PRINTING MACHINES

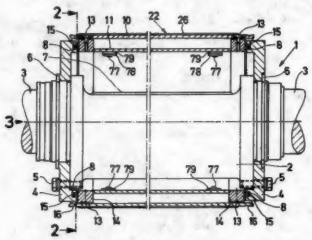
Manfred Arlt, Heidelberg, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Aug. 16, 1985, Ser. No. 766,772

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1984, 3430131

Int. Cl.[4] B41F *21/10;* **B41L** *21/06*

U.S. Cl. 101—411 **21 Claims**



1. In sheet-fed rotary printing machines, a sheet transfer cylinder having a sheet-bearing cylinder jacket formed of a plurality of jacket segments arranged next to one another in circumferential direction of the cylinder, the jacket segments extending at least over a sheet-bearing circumferential area of the sheet transfer cylinder, comprising locking elements located at respective ends of the jacket segments and engaging in corresponding receiving elements on end surfaces of the cylinder, said locking elements being a pair of guide cams located at each end of the jacket segments, and said receiving elements being receiving grooves formed concentrically in a support disc defining an end surface of the cylinder, said guide cams being guided in circumferential direction of the cylinder and lockable in said receiving grooves.

4,608,926

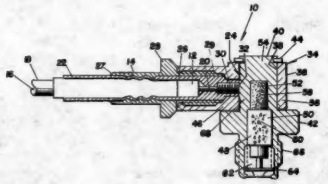
SWIVEL TYPE THROUGH BULKHEAD INITIATOR

George L. Stevens, North Ogden, Utah, assignor to Thiokol Corporation, Chicago, Ill.

Filed Sep. 13, 1984, Ser. No. 650,139

Int. Cl.[4] F42B *19/08;* **F42C** *5/00*

U.S. Cl. 102—275.4 **10 Claims**



1. A through bulkhead initiator comprising:

a donor charge,

an acceptor charge, and
a full circle swivel assembly including a swivel sleeve and an initiator body,
said swivel sleeve containing said donor charge,
said initiator body having a cavity formed therein with a sealing barrier at one end, the wall of at least a portion of said cavity adjacent said barrier being cylindrical and having a substantially uniform cross section,
said acceptor charge being contained within said portion of said cavity,
said swivel sleeve being positioned, with respect to said body, in surrounding relation with said portion of said cavity.

4,608,927

SEGMENTED SABOT

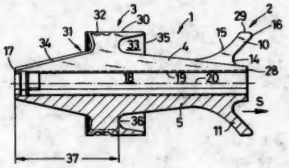
Rudolf Romer, Roseggerstrasse 3, Kaarst; Juergen Boecker, Am Wall 15, Oberhausen; Klaus W. Klein, Lahnstrasse 10, Neuss; Klaus Gersbach, Friedrichstrasse 5, Willich; Jürgen Winkelmann, Industriestrasse 86, Kaarst, and Winfried Rossmann, Benzstrasse 10, Neuss, all of Fed. Rep. of Germany

Filed Apr. 23, 1984, Ser. No. 603,131

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1983, 3314749

Int. Cl.[4] F42B *13/16*

U.S. Cl. 102—521 **6 Claims**



1. A sabot for use on a penetrator projectile normally fired from a gun barrel in a longitudinal firing direction, the sabot being segmented and formed with:
a body of an outer diameter substantially smaller than the caliber of the gun barrel, adapted to fit snugly around the penetrator projectile, and having relative to the firing direction a front end and a rear end;
a plurality of radially spaced support webs projecting radially from the front end of the body and having respective outer surfaces engageable with the barrel to center the front end therein, the webs defining longitudinally open gaps through which air can stream longitudinally back between the webs against the firing direction when the sabot and projectile are fired in this direction; and
a rearward centering ridge projecting radially from the body longitudinally behind the webs and having an outer surface engageable with the barrel to center the rear end therein, the ridge having angularly continuous and defining a forwardly concave and open air-receiving pocket between its outer surface and the body, whereby air streaming back against the direction between the webs is trapped in the pocket.

4,608,928

TRACK-BOUND CARRIAGE FOR AN ASSEMBLED TRACK SECTION

Josef Theurer, Vienna, and Friedrich Oellerer, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

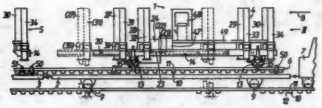
Filed May 20, 1985, Ser. No. 735,625

Claims priority, application Austria, Oct. 31, 1984, 3470/84

Int. Cl.[4] E01B *29/02*

U.S. Cl. 104—3 **19 Claims**

1. A track-bound carriage for receiving or laying an assembled track section from or on a track bed and for transporting the assembled track section in an operating direction, the assembled track section consisting of rails extending in the operating direction and fastened to ties having two ends, which comprises
(a) an elongated carrier frame having two sides defining planes extending in the operating direction and the carrier frame having a forward half and a rear half,
(b) two undercarriages respectively supporting the forward and rear carrier frame halves on the assembled track section for movement therealong,
(1) each one of the undercarriages including a flanged wheel engaging a respective one of the rails for support of the elongated carrier frame on the assembled track section,
(c) a device for advancing the carrier frame stepwise in the operating direction, the carrier frame advancing device including



(1) two pairs of independently operable jacks arranged adjacent each other in the operating direction on each carrier frame half, each jack of each of said pairs being mounted at a respective one of the carrier frame sides outwardly spaced from a respective one of the tie ends, operation of the jacks vertically adjusting the jacks and enabling the jacks to engage the track bed, and
(2) means for moving one of the pairs of jacks on each carrier frame half in relation to the other pair of jacks on each carrier frame half in the operating direction while the other pair of jacks engages the track bed and supports the elongated carrier frame thereon, and
(d) rail gripping devices for detachably holding the assembled track section, each rail gripping device being adjustable transversely with respect to the operating direction.

4,608,929

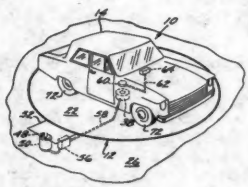
AUTOMOBILE PARKING AND STORAGE SYSTEM

Kap Y. Park, 1522 Forest Glen Dr., Hacienda Heights, Calif. 91745

Filed Apr. 19, 1985, Ser. No. 725,343

Int. Cl.[4] B60S *13/02*

U.S. Cl. 104—44 **20 Claims**



5. An automobile parking and storage system comprising:
a rotating assembly capable of being rotated with an automobile thereon to orient the automobile in any desired direction;
means for rotating the rotating assembly; and
means for controlling the rotating means from the automobile, the controlling means including an automobile-mounted transmitter which is capable of sending signals to a receiver situated within or immediately below the rotating assembly, and a controller which regulates activation of the rotating means and the direction of its rotation in response to signals received from the receiver, such con-

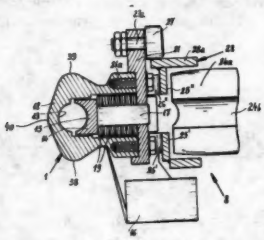
trolling means providing an inherent safety mechanism which prevents activation of the rotating means unless the automobile is situated directly over the rotating assembly.

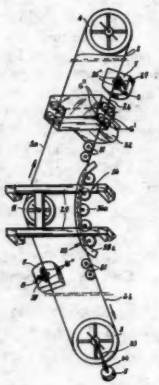
4,608,930

CABLEWAY WITH TRANSPORT PATH HAVING ONE OR MORE LATERAL INFLECTION POINTS

Jean-Marie Galmiche, Echirolles, France, assignor to Societe Anonyme Dite: Etablissements Montaz-Mautino, Fontaine, France

Filed May 19, 1982, Ser. No. 379,889
Claims priority, application France, May 20, 1981, 81 10381
Int. Cl.[4] B61B *7/04*
U.S. Cl. 104—180 **5 Claims**





1. In a transportation system with an endless cable wound under tension in a loop around two reversing pulleys at opposite ends of the loop, at least one of said reversing pulleys being driven, said loop forming two substantially parallel runs supported at intermediate locations by sustaining pulleys with axes substantially parallel to a plane defined by said runs, said reversing and sustaining pulleys being held above the ground by overhead mountings, and with at least one load carried on said cable by suspension means including a cable-gripping clamp projecting laterally outward from said loop to avoid said mountings,

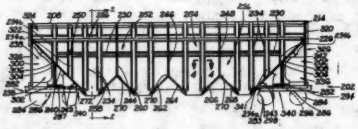
the combination therewith of first and second deflecting means laterally engaging one of said runs from inside the loop and the other of said runs from outside the loop, respectively, for imparting substantially coplanar bends to said runs with centers of curvature on the same side of the loop, said second deflecting means being provided with a stationary guard rail with a substantially vertical web normally projecting past said other of said runs on a level above said suspension means with a curvature in the plane of the loop conforming to the bend of said other of said runs and with at least one more sharply curved extremity, said clamp having jaw means surrounding an engaged cable portion for separating same from said reversing and sustaining pulleys and from said first deflecting means upon passage through said opposite ends, said intermediate locations and the bend of said one of said runs, said clamp being further provided with roller means parallel to said plane engageable with the web of said guard rail upon encountering said more sharply curved extremity thereof on an approach of the bend of said other of said runs for temporarily detaching said cable from said second deflecting means while guiding said suspension means past said second deflecting means, said guard rail being provided with a shelf overlying said web, said clamp further carrying a lateral roller positioned to ride on said shelf for supporting said suspension means during the temporary detachment of said cable from said second deflecting means.

4,608,931

FILAMENT WOUND RAILWAY HOPPER CAR

Douglas C. Ruhmann, Brentwood; Ralph A. Britton, St. Charles; James D. Mundloch, Florissant, and Frederick E. Vorwerk, St. Peters, all of Mo., assignors to ACF Industries, Incorporated, Earth City, Mo.

Filed Dec. 3, 1981, Ser. No. 326,796
Int. Cl.[4] B61D *7/00*
U.S. Cl. 105—248 **7 Claims**

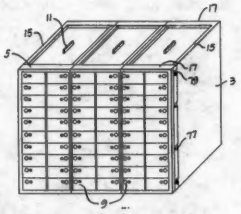


1. A filament wound car body comprising: a filament wound car body including a pair of spaced car body sides; a pair of spaced longitudinally extending car body side sills, one for each of said car body sides, adapted to carry longitudinal loads; connecting means joining each of said car body side sills to its respective said car body side along the lower margin thereof whereby only a portion of the longitudinal loads carried by said car body sills are transmitted to said filament wound car body sides substantially entirely in shear; said car body including a pair of spaced top sills extending longitudinally of the car generally above a respective said side sill, said top sills being connected to said car body sides; said car body sides being joined by at least one transverse bulkhead intermediate the ends of said car body; a railway car roof joining said car body sides along the upper portions thereof; planar end slope sheets located at each end of the car extending between said side sills from the upper to the lower portions of the side walls; said end slope sheets joining said car sides at opposite ends of the car; and hopper slope sheets connected to said transverse bulkheads extending transversely of the car body generally below the transverse bulkheads and connected to said car body sides; said end slope sheets being of composite construction having a core and at least one face sheet secured thereto being adapted to react lading loads and coupler loads applied thereto.

4,608,932
SAFETY DEPOSIT BOX SYSTEM

Robert J. Bohland; Charles E. Delamater; John W. Elseser, and William L. Gensamer, all of Stark County, Ohio, assignors to Diebold, Incorporated, Canton, Ohio

Filed May 25, 1984, Ser. No. 614,185
Int. Cl.[4] E05G *1/00*
U.S. Cl. 109—56 15 Claims



1. A safety deposit box system comprising:

a casing including a pair of opposing, parallel vertical casing walls, and a plurality of horizontal casing shelves disposed between said vertical casing walls for cooperating with said vertical walls to define a plurality of compartments, said casing and said vertical walls and said shelves having forward portions;

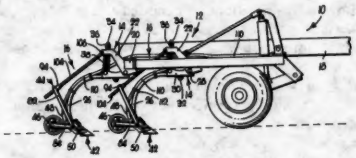
a frame attached to the forward portion of said casing, said frame including vertical frame walls generally forwardly opposed to said vertical casing walls but rendering one of the vertical casing walls adjacent the respective compartments accessible; and

at least one door assembly comprising at least one door for closing a compartment, said door having a free end portion and a hinged end portion, a hinge having first hinge leaf means attachable directly to said accessible vertical casing wall and second hinge leaf means attached to the hinged end portion of the door, and attaching means for engaging said first hinge leaf means and attaching said door assembly directly to said accessible vertical casing wall, said door being pivotable on said hinge about the vertical casing wall to selectively open and close the compartment.

4,608,933
APPARATUS FOR CONVERTING A CHISEL PLOW TO A PLANTER

John B. Wyrill, III, Kirwin, Kans., assignor to Wyrill Leasing, Inc., Kirwin, Kans.

Filed Oct. 24, 1984, Ser. No. 664,146
Int. Cl.[4] A01C *5/06*; A01B *49/06*
U.S. Cl. 111—85 17 Claims



1. Apparatus for use in converting a conventional pull-type earth-working implement into a planter, said conventional implement including a stationary bracket having an upper end and a lower end, an elongated, rearwardly and downwardly extending shank adapted to receive a lowermost earth-engaging tool, fixed pivot means pivotally attaching the upper end of said shank to the lower end of said bracket for upward and rearward swinging of the shank about said fixed pivot means, and spring structure operably coupled with said shank for biasing the shank downwardly and for yieldably permitting upward swinging of the shank against the bias of the spring structure, said conversion apparatus comprising:

means for opening a seed planting furrow in the earth;

means for mounting said furrow-opening means on the shank adjacent the lower end thereof;

means for delivery of seed to a planting furrow opened by said furrow-opening means; and

a furrow closing assembly including

an earth-engaging element for closing a seed planting furrow;

linkage means pivotally supporting said element in an up-and-down pivotal, earth-engaging, trailing relationship to said furrow-opening and seed delivery means, and for causing downward pivotal movement of the element in response to limited upward pivotal movement of said shank about said fixed pivot means in order to assure continual contact between the element and the earth,

said linkage means including a first arm pivotally coupled with the shank adjacent said lower end thereof and extending upwardly and rearwardly therefrom, and a second arm pivotally coupled with said first arm adjacent the upper rearward end thereof and extending upwardly and forwardly therefrom; and

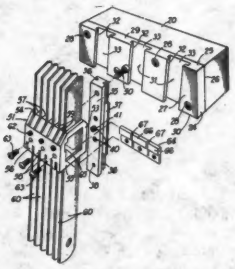
a fixed pivotal coupling pivotally securing the upper and forward end of said second arm to the upper end of said bracket, whereby to define a four-bar linkage of which said bracket is a stationary bar and the shank and the arms are swingable bars,

said earth engaging element being mounted for movement with said first arm.

4,608,934
KNIFE HOLDER ASSEMBLY FOR A CUT PILE TUFTING MACHINE AND PROCESS OF ASSEMBLING THE SAME

Roy T. Card, 4012 Creekwood Ter., Chattanooga, Tenn. 37421, and Joseph L. Card, 1515 Edgewood Cir., Chattanooga, Tenn. 37405

Continuation-in-part of Ser. No. 508,853, Jun. 29, 1983. This application Aug. 9, 1984, Ser. No. 639,144
Int. Cl.[4] D05C *15/00*
U.S. Cl. 112—80.60 12 Claims



1. A knife holder assembly, for a tufting machine of the type having loopers in spaced parallel relationships for engaging and holding loops of yarns sewn into a backing material and wherein a plurality of parallel elongated knives having cutting edges of their ends, are disposed with their cutting edges respectively in cutting engagement with the sides of said loopers the body portions of said knives being disposed below said loopers and wherein a support means below said loopers is reciprocated for imparting cutting motion to said knives, comprising:

(a) a moveable knife carriage for removeably receiving and holding said knives in prescribed positions therein and so

that the portions of said knives which contain the cutting edges protrude in the same direction from said knife carriage;

(b) a carrying member for being mounted on said support means for movement therewith, said carrying member having surface portion for receiving a portion of said knife carriage thereon;

(c) guide means for defining a prescribed generally upright path of travel for said knife carriage along which said knife carriage is moveable upwardly and downwardly toward and away from said loopers;

(d) means for confining said knife carriage within said path during a portion of its travel along said path;

(e) said surface of said carrying member and said guide means and said means for confusingly said knife carriage within said path cooperating to permit said knife carriage to be progressively move upwardly for carrying said plurality of said knives from a position in which the cutting edges of said knives are below and spaced form said loopers; and

(f) detent means for releasably locking said knife carriage in a position in said path in which said knife carriage holds;

(g) said cutting edges in their cutting engagement positions, said detent means when released, permitting said knife carriage to be moved progressively downwardly within said path for simultaneously withdrawing said knives progressively downward from said loopers until said knife carriage is no longer confined in said path.

4,608,935

TUFTING MACHINE YARN FEED ROLLER ASSEMBLY

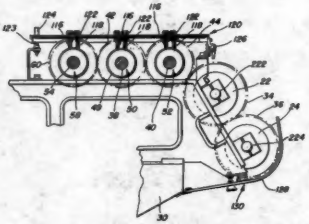
Harold B. Bardsley, Euxton, near Chorley, England, assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Dec. 6, 1985, Ser. No. 805,867

Claims priority, application United Kingdom, Jun. 19, 1985, 8515566

Int. Cl.[4] D05C *15/00*

U.S. Cl. 112—79 A **11 Claims**



1. A yarn feed roller assembly for a tufting machine comprising a plurality of sets of rollers about which yarn is adapted to be wound and fed, a plurality of rotatably mounted drive shafts each adapted to be driven at a different speed, a feed gear rotatably mounted on each drive shaft, corresponding feed gears of the respective shafts being in meshing relationship and defining a gear set, each gear set corresponding to each set of rollers, a selectively operable clutch corresponding to each feed gear, each clutch having a first part fixed on the respective drive shaft for rotation therewith, and a second part rotatably fastened to the corresponding feed gear and axially moveable relative to the respective drive shaft toward and away from said first part, whereby selective actuation of a clutch couples the corresponding feed gear to the respective drive shaft for rotation therewith and each gear of a gear set is driven at a speed determined by the speed of the drive shaft carrying the actuated clutch, and gear means associated with each set of rollers disposed in meshing relationship with a corresponding feed gear of the respective gear set for driving each roller set at a speed determined by the speed of the corresponding gear set.

4,608,936

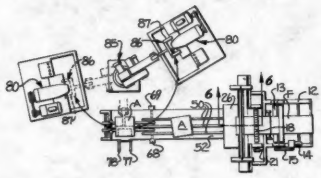
APPARATUS FOR AUTOMATICALLY FABRICATING CUT AND EDGE STITCHED TEXTILE ARTICLES

Gregory A. Ball, Mooresville; Byron E. Moore, Kannapolis; John D. Haynes, Faith, and James N. Moser, Kannapolis, all of N.C., assignors to Cannon Mills Company, Kannapolis, N.C.

Filed Nov. 18, 1985, Ser. No. 799,163

Int. Cl.[4] D05B *21/00, 27/08*

U.S. Cl. 112—121.12 **10 Claims**



1. Apparatus for automatically fabricating cut and edge stitched articles, such as washcloths and the like, from a continuous length of textile fabric; said apparatus comprising:

a supply source of continuous textile fabric,

means for successively withdrawing predetermined lengths of the textile fabric from said supply source and along a path of travel in a longitudinal direction of the fabric;

cutting means positioned in the path of travel of the textile fabric for successively transversely cutting the textile fabric into individual articles of predetermined dimensions;

means for successively feeding the cut articles from said cutting means in a generally straight-line longitudinal path of travel;

means for receiving the cut articles from said article feeding means and for squaring the cut articles in the straight-line longitudinal path of travel;

means for receiving and edge stitching the cut articles to complete fabrication thereof; and

robot means positioned for successively picking-up the cut articles at said squaring means and transporting the cut articles to said edge stitching means.

2. Apparatus for automatically fabricating cut and edge stitched articles, such as washcloths and the like, from a continuous length of textile fabric; said apparatus comprising:

a supply source of continuous textile fabric,

means for successively withdrawing predetermined lengths of the textile fabric from said supply source and along a path of travel in a longitudinal direction of the fabric;

cutting means positioned in the path of travel of the textile fabric for successively transversely cutting the textile fabric into individual articles of predetermined dimensions;

means for successively feeding the cut articles from said cutting means in a generally straight-line longitudinal path of travel;

means for successively receiving the cut articles from said article feeding means and for squaring the cut articles in the straight-line longitudinal path of travel;

a plurality of edge stitching means for receiving and edge stitching the cut articles to complete fabrication thereof; and

a single robot means for successively picking-up the cut articles at said squaring means and transporting the cut articles alternately to each of said plurality of edge stitching means.

3. Apparatus for automatically fabricating cut and edge

stitched articles, such as washcloths and the like, from a continuous length of textile fabric; said apparatus comprising:

a supply source of continuous textile fabric,

means for successively withdrawing predetermined lengths of the textile fabric from said supply source and along a path of travel in a longitudinal direction of the fabric;

cutting means positioned in the path of travel of the textile fabric for successively transversely cutting the textile fabric into individual articles of predetermined dimensions:

means for successively feeding the cut articles from said cutting means in a generally straight-line longitudinal path of travel;

a plurality of means for alternately receiving the cut articles from said article feeding means and for squaring the cut articles in the straight-line longitudinal path of travel;

a plurality of means, one of which is respectively positioned adjacent each of said squaring means in the straight-line path of travel of the articles, for receiving and edge stitching the cut articles to complete fabrication thereof; and

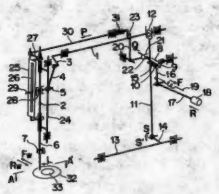
a plurality of robot means, one of which is respectively positioned adjacent each of said squaring means in the straight-line path of travel of the articles, for picking-up the cut articles at said respective squaring means and transporting the cut articles to said respective edge stitching means.

4,608,937

DEVICE FOR STABILIZING STITCHES IN A SEWING MACHINE

Yasukata Eguchi, Kunitachi, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 460,885, Jan. 25, 1983, abandoned. This application Mar. 11, 1985, Ser. No. 709,787
Claims priority, application Japan, Feb. 4, 1982, 57-15560
Int. Cl.[4] D05B *27/22, 3/00*
U.S. Cl. 112—121.13 **5 Claims**



1. A device for producing stable stitches, utilizing upper and ower threads, in a sewing machine for a fabric being movable n forward and backward directions, comprising:

a reciprocable needle bar having an axis and a needle with a lower end, the upper thread being secured to said lower end of said needle;

a machine frame;

a loop taker;

an upper drive shaft rotatably supported in said machine frame and vertically reciprocating said needle bar so that the stitches are produced in the fabric to be sewn, the stitches being composed of the upper thread and the lower thread which is supplied as the fabric is transported in one direction and is interlocked with the upper thread by said loop taker;

a feed regulator pivotable to a first position for transporting the fabric in the forward direction and to a second position for transporting the fabric in the backward direction;

transmission means, said transmission means being operatively interconnected between said needle bar and said feed regulator and operating in association with said regulator when said regulator is pivoted to said second position so that said needle bar is axially rotated in a counterclockwise direction through a predetermined angle from 10° to 15° so as to displace the upper thread and thereby to prevent the upper thread from being non-uniformly interlocked by the lower thread; and

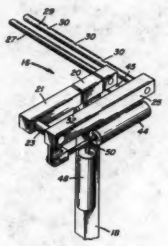
means for holding said needle bar such that said needle nar may be vertically reciprocated and axially rotated.

4,608,938

FABRIC PIECE STACKER APPLIED TO A SEWING MACHINE

Flavio Bisson, Cava Manara, Italy, assignor to Necchi Societa per Azioni, Pavia, Italy

Filed Oct. 29, 1985, Ser. No. 792,594
Claims priority, application Italy, Feb. 8, 1985, 42903 A/85
Int. Cl.[4] D05B *33/00*
U.S. Cl. 112—121.29 **4 Claims**



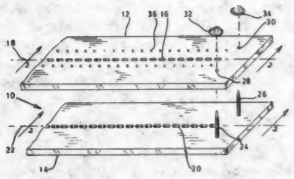
1. Fabric piece stacker applied to a sewing machine comprising a vertical element, a first rod axially rotatably attached to one end of said element, a second rod, a pin interconnecting said first and second rods at one end of each, a bar fixed to the other end of each of said first and second rods, said bars being parallel and adapted to engage a sewn fabric piece and to stack it on a support, and means being provided to enable said vertical element and said rods to oscillate.

4,608,939

QUILTING OR SEWING GUIDE

Nancy Lampley, Rte. 2, Bon Aqua, Tenn. 37023

Filed Jul. 1, 1985, Ser. No. 750,285
Int. Cl.[4] D05B *91/10;* D05C *9/04*
U.S. Cl. 112—260 **6 Claims**



1. A reusable sewing pattern for achieving hand sewn stitches of a selected controlled length along a selected path at any position in a fabric, which comprises:

a first substantially rigid template unit fabricated of a durable material to be placed on one surface of such fabric, said first template unit provided with a plurality of perforations therethrough to receive and guide a needle and

thread to produce such stitches, said perforations being of a dimension to produce such selected length and arranged along such selected path;

a second substantially rigid template unit fabricated of a durable material to be placed on an opposite surface of such fabric, said second template unit provided with a plurality of perforations therethrough to receive and guide said needle and thread, said perforations in said second template unit being complimentary to and overlapping spaces between perforations in said first template unit an amount just sufficient for passage of said needle and thread to produce stitches of such selected length arranged along such selected path; and

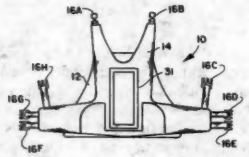
fastener means for releasably attaching said first and second template units to such fabric and for accurately aligning said perforations of said first and second template units in said overlapping relationship during the forming of such hand sewn stitches by said needle and thread, said fastener means comprising at least two stud members attached to and extending from one of said template units, the other of said template units provided with apertures for the passage of said stud members therethrough, whereby said overlapping relationship of said perforations in said first and second template units provides for closely receiving said needle and thread at each ends of said perforations and thereby produces such stitches of such controlled length such selected path.

4,608,940

REMOTE WEIGHT RELEASE FOR A BOUYANCY CONTROL DEVICE

Dennis G. Bulin, P.O. Box 1144, Zephyrhills, Fla. 34248

Filed Nov. 19, 1984, Ser. No. 672,471
Int. Cl.[4] B63C *11/46*
U.S. Cl. 114—315 **12 Claims**



1. A remote control weight release device for diving buoyancy control device, said remote control device comprising in combination:

a sheet of flexible material secured to the buoyancy control device, said material and the buoyancy control device defining therebetween a pocket for the releasable reception therein of the weight, said pocket having a first open end such that the weight may freely exit from said pocket through said first open end of said pocket;

said sheet of flexible material further includes a seam for securing said sheet of flexible material adjacent to the buoyancy control device, such that said sheet of flexible material, said seam and the buoyancy control device define a second closable end which is disposed opposite to said first open end, said second open end permitting the loading of the weight therethrough;

fastening means disposed adjacent to said first open end of said pocket for fastening said first open end of said pocket for controlling the passage of the weight through said first open end of said pocket; and

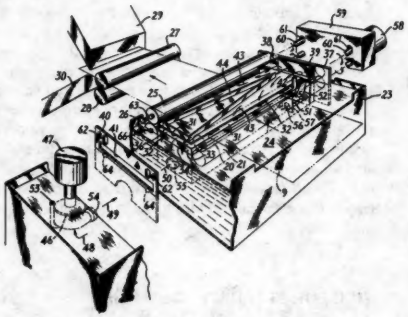
remote control means connected to said fastening means for remotely controlling said fastening means such that in a first position of said control means said fastening means closes the first open end of said pocket to inhibit the passage of the weight therethrough, and such that in a second position of said control means said fastening means releases the first open end of the pocket to permit the weight to pass through said first open end of the pocket to increase the buoyancy of the diving buoyancy control device.

4,608,941

APPARATUS FOR SOLDERING PRINTED CIRCUIT PANELS

Gilbert V. Morris, Amherst, N.H., assignor to Teledyne Electro-Mechanisms, Hudson, N.H.

Filed Jan. 10, 1985, Ser. No. 690,140
Int. Cl.[4] H05K *3/22*
U.S. Cl. 118—63 **11 Claims**



1. Apparatus for soldering printed circuit panels comprising a container for molten solder, means for supplying heat to the container to maintain the molten solder at a desired temperature, pairs of input and output rolls mounted in a horizontal configuration for conveying printed circuit panels horizontally across the solder container, means mounting two of the pairs of rolls with the lower rolls having their upper surfaces protruding from the molten solder, means forming a solder conduit between the two pairs of rolls, said forming means including (a) a lower surface extending between the pairs of rolls (b) an upper surface extending between the pairs of rolls and (c) the two pairs of rolls, means for flowing molten solder horizontally along the conduit whereby printed circuit panels conveyed through the horizontal roll configuration pass through the horizontal flow of molten solder, the upper surface restricting flotation of the printed circuit panels by the molten solder.

4,608,942

METHOD OF CONTINUOUSLY SPRAYING LIQUIDS ONTO LENGTHY BODIES MOVING AT HIGH SPEED

Kanji Hayashi, Tokyo, Japan, assignor to Fanetech Institute Limited, Japan

Filed May 13, 1985, Ser. No. 733,511
Claims priority, application Japan, May 12, 1984, 59-95447
Int. Cl.[4] B05B *1/26, 15/00*
U.S. Cl. 118—316 **2 Claims**

1. A device for applying a liquid substance to an elongated body comprising:

a housing having a movement channel therethrough for the passage of the elongated body;

body movement means for moving the elongated body at high speed through said movement channel in a movement direction;

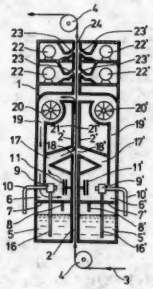
said housing having at a lower end thereof at least one liquid tank for containing a supply of the liquid substance to be applied to the elongated body;

said housing defining a fine particle producing chamber above said liquid tank having an accumulator channel communicating with said movement channel;

drainage means for draining liquid from a bottom of said fine particle chamber to said liquid tank;

spray nozzle means in said fine particle chamber below said accumulator channel for spraying a mixture of liquid substance plus air in a horizontal direction in said fine particle chamber, said nozzle means being connected to a source of compressed air and being connected to said liquid tank for drawing liquid substance from the liquid tank;

vertical impingement plate means positioned in said fine particle chamber at a location spaced from said nozzle



means and positioned to receive a spray from said nozzle means, said impingement plate means being shaped to break up liquid spray into fine particles; and

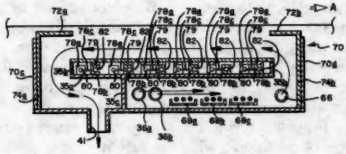
air circulation means connected in said accumulator channel for circulating fine particles and air through said accumulator channel from said fine particle chamber to an area of said accumulator tank communicating with said movement channel, and then back to said fine particle chamber whereby a fine particle mist is deposited on the elongated body as it moves at high speed through said movement channel.

4,608,943

CATHODE ASSEMBLY WITH LOCALIZED PROFILING CAPABILITIES

Joachim Doehler, Union Lake, and Masatsugu Izu, Birmingham, both of Mich., assignors to Sovonics Solar Systems, Troy, Mich.

Filed Oct. 24, 1984, Ser. No. 664,453
Int. Cl.[4] C23C *16/50*
U.S. Cl. 118—718 **16 Claims**



1. An improved assembly for the glow discharge deposition of thin film layers of semiconductor alloy material onto a substrate including: means adapted to continuously move said substrate through a plasma region formed within said chamber between the substrate and an apertured cathode spacedly positioned adjacent thereto; introduction manifold disposed remotely of the plasma region for introducing at least one gaseous precursor source of semiconductor alloy material into the plasma region; exhaust means disposed remotely of said plasma region; means for channeling the gaseous precursor source through the plasma region in a direction of travel substantially parallel to the direction of movement of the substrate, said channeling means including shield means for directing the gaseous precursor source from the introduction manifold disposed remotely of the plasma region, through the plasma region and through the exhaust disposed remotely of the plasma region; the improvement comprising, in combination:

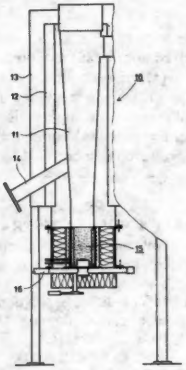
means for introducing at least a first additional gaseous precursor material through the apertures in the cathode into at least only localized areas of the plasma region so as to deposit any preselected profile of the first additional gaseous precursor material into the depositing layer of semiconductor alloy material.

4,608,944

IGNITION DEVICE FOR FLUIDIZED BED BOILER

Toivo Kärnä, Porvoo, Finland, assignor to Neste Oy, Finland

Filed Feb. 15, 1985, Ser. No. 701,982
Claims priority, application Finland, Feb. 17, 1984, 840670
Int. Cl.[4] F23B *1/02*
U.S. Cl. 122—4 D **8 Claims**



1. An ignition device for a heating boiler having a combustion section operating according to the fluidized bed principle, said ignition device comprising

a jacket body for containing a bed of fluidizable particles therewithin,

heating means for heating the bed of fluidizable particles, said heating means being disposed on an outside surface of said jacket body facing aaway from the bed of fluidizable particles so that said heating means does not contact the fluidizable particles, and

at least one heat transfer element disposed inside and on the surface of said jacket body facing the bed of particles, whereby said heat transfer element is in direct heat contact with said heating means and is in contact with, and by heat transfer can heat, the bed of particles.

4,608,945

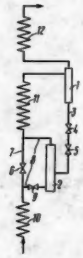
APPARATUS FOR RECIRCULATING BOILER FLUID

Andrei G. Yastrebov, Moscow, U.S.S.R., assignor to Vsesojuzny Nauchno-Issledovatelsky Institut Atomnogo Energeticheskogo Mashinostroenia, Moscow, U.S.S.R.

PCT No. PCT/SU84/00065, § 371 Date Oct. 2, 1985, § 102(e) Date Oct. 2, 1985, PCT Pub. No. WO85/02667, PCT Pub. Date Jun. 20, 1985
PCT Filed Nov. 26, 1984, Ser. No. 770,286
Claims priority, application U.S.S.R., Dec. 6, 1983, 3669382
Int. Cl.[4] F22D *1/00, 7/04*
U.S. Cl. 122—407 **2 Claims**

1. An apparatus for recirculating boiler fluid, comprising a separator (1), a controlled water jet pump (2) connected thereto by a recirculation pipeline (3) and a feed valve (6)

installed on a feedwater pipeline (7), a static pressure chamber (13) of the jet pump (2) accommodating an axially movable cylindrical member (14) having a movable nozzle (17), characterized in that the jet pump (2) is connected in parallel to the feed valve (6) and feedwater pipeline (7) by a bypass pipeline (8), and the static pressure chamber (13) of the jet pump (2) is



provided with a fixed nozzle (19) mounted concentrically with the movable nozzle (17) of the hollow cylindrical member (14), overflow openings (18) being provided in the walls of the hollow cylindrical member through which the interior of the hollow cylindrical member (14) communicates with the interior of the static pressure chamber (13).

4,608,946

PORTABLE ENGINE-GENERATOR SET

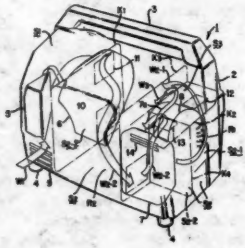
Yoshio Tanaka, Fujimi, and Yasuo Sugimoto, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1984, Ser. No. 609,388

Claims priority, application Japan, May 11, 1983, 58-70361[U]; May 20, 1983, 58-75781[U]

Int. Cl.⁴ F02B *63/04*

U.S. Cl. 123—2 **3 Claims**



1. A portable engine-generator set including a soundproof cover defining an internal space therewithin for housing components of said engine-generator set, and a plurality of partitions provided in said internal space and, in cooperation with said cover and a shroud covering an engine of said engine-generator set, partitioning said internal space into

(a) an intake compartment, said intake compartment including intake port means for drawing atmospheric air into said cover;

(b) a heat source compartment in communication with said intake compartment, said heat source compartment comprising first and second subcompartments each forming independent cooling air passages and each having an air intake port in communication with said intake compartment, a generator of said engine-generator set being positioned within said first subcompartment, and said engine and a muffler of said engine-generator set being positioned within said second subcompartment; and

(c) an exhaust compartment in communication with said heat source compartment, said exhaust compartment having an exhaust port means in communication with the atmosphere, and having intake ports in communication with said first and second subcompartments of said heat source compartment whereby air flow from said first and second subcompartments is combined in said exhaust compartment, exhaust gas from said muffler being discharged into said exhaust compartment, and said exhaust compartment having sound absorbing material provided on at least a portion of defining walls thereof such that said exhaust compartment forms a silencer box;

wherein said exhaust gas discharged from said muffler into said exhaust compartment is mixed therein with said air flow from said first and second subcompartments.

4,608,947

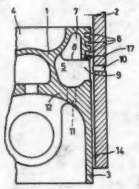
ARRANGEMENT FOR COOLING PISTONS AND CYLINDER SLEEVES

Hans Stadler, Berg.-Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Jul. 5, 1985, Ser. No. 752,373

Int. Cl.⁴ F10P *3/10*

U.S. Cl. 123—41.39 **19 Claims**



1. An arrangement for cooling the pistons and cylinder sleeves of piston/cylinder units of an internal combustion engine; each piston/cylinder unit has at least one cooling chamber, which is delimited by the piston and cylinder sleeve of that unit, and also has suitable sealing means, such as piston rings, provided on that end of said piston closest to the combustion chamber; said cooling chamber extends in the circumferential direction of said piston, is provided with means to supply cooling medium thereto and with means to withdraw cooling medium therefrom, and is provided with at least two approximately axially extending guide elements;

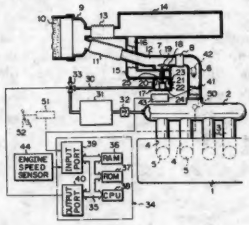
the improvement wherein said guide elements are in the form of partitions, with the height of said partitions, as measured in the axial direction of said cylinder, being less than the similarly measured height of said cooling chamber, so that the latter is divided into two axial portions, namely a first axial portion in which said partitions extend, and a second axial portion which is free of said partitions; when viewed in the circumferential direction of said piston, said partitions divide said first axial portion of said cooling chamber into at least two subchambers which are separated from one another, yet communicate with one another via said second axial portion of said cooling chamber; a given subchamber is provided with said cooling medium supply means, and the adjacent subchamber is provided with said cooling medium withdrawal means.

4,608,948

AIR INTAKE DEVICE OF AN INTERNAL COMBUSTION ENGINE

Tokuta Inoue, Mishima; Kiyohiko Oishi, Susono; Takamitsu Okamoto, Susono, and Keiso Takeda, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 13, 1984, Ser. No. 650,247
Claims priority, application Japan, Feb. 4, 1984, 59-17661
Int. Cl.[4] F02B 75/18
U.S. Cl. 123—52 M 16 Claims



1. An air intake device for an internal combustion engine having an air cleaner and a cylinder, said device comprising:

a main air intake passage interconnecting the air cleaner to the cylinder;

an auxiliary air intake passage having a first end and a second end which are connected to the air cleaner and said main air intake passage, respectively, said auxiliary air intake passage having an equivalent pipe length which is substantially equal to that of said main air intake passage;

valve means arranged in the second end of said auxiliary air intake passage and having a valve port and a disc-shaped valve body which faces said valve port, said valve body having a conically-shaped convex front face which is directed toward said main air intake passage and having a conically-shaped convex rear face which is formed opposite to said front face;

means for actuating said valve body in response to an engine speed to open said valve port when the engine speed is within a predetermined first speed range and close said valve port by said valve body when the engine speed is within a predetermined second range, wherein said first speed range comprises a high speed range, and said second speed range comprises a range of the engine speed which is lower than the engine speed in said high speed range;

a throttle valve arranged in said main air intake passage; and

a single fuel injector arranged in said main air intake passage upstream of said throttle valve and downstream of the second end of said auxiliary air intake passage.

4,608,949

TWO-CYCLE ENGINE

Yasuhiko Nakano, Saitama, and Shigemitsu Akutsu, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 5, 1984, Ser. No. 647,588
Claims priority, application Japan, Sep. 5, 1983, 58-163086
Int. Cl.[4] F02B 33/04
U.S. Cl. 123—73 A 7 Claims

1. A two-cycle engine intended for use in a motorcycle, including:

an engine body having formed therein a crank chamber, and an intake port for introducing fuel-air mixture from a carburetor installed outside of said engine body to said crank chamber;

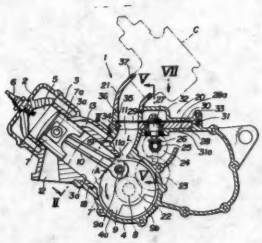
said engine body having therein a cylinder defining a cylinder chamber communicatable with said crank chamber, and at least a cylinder skirt portion extending so as to block an end opening as a cylinder opening of said intake port, said skirt portion having both sides thereof cut symmetrically with respect to the axis of the cylinder while keeping the length thereof in the axial direction of said cylinder, said cylinder being directed such that the axis thereof ascends from said crank chamber frontwardly of said motorcycle, said intake port being directed so as to ascend from between said crank chamber and said cylinder chamber rearwardly of said motorcycle;

a piston slidably fitted in said cylinder;

a crank shaft rotatably arranged in said crank chamber perpendicularly to the center axis of said cylinder and directed transversely of said motorcycle, said intake port extending in a direction perpendicular to said crankshaft;

at least one substantially disc-like crank web fixed at the central part thereof to said crankshaft, said intake port being arranged to as to extend substantially along a tangential line said crank web defines at a top point thereof on the side of said cylinder;

a connecting rod operatively interconnecting said crankshaft with said piston;



rotary valve means provided for said engine body and operatively connected to said crankshaft so as to open and close an end opening of said intake port on the side of said carburetor in accordance with the stroke of said piston;

said rotary valve means consisting of a valve shaft directed upright to extend perpendicularly to said crankshaft and operatively connected to said crankshaft, a rotary disc fixed at the central part thereof to said valve shaft and adapted to be located at a part thereof in said intake port so as to shut said intake port, said rotary disc having at least one valve opening, and a valve cover mounted on said engine body so as to cover said rotary disc and fromed with an intake hole corresponding to said intake port; and

an intake tube for connecting said intake hole of said valve cover to said carburetor, said intake tube being fastened to said intake hole of said valve cover so as to be integral therewith.

4,608,950

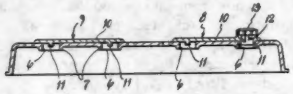
MACHINE COVER

Derick B. Payne, and Kenneth Osborne, both of Peterborough, England, assignors to Perkins Engines Group Limited, London, England

PCT No. PCT/GB84/00134, § 371 Date Dec. 7, 1984, § 102(e) Date Dec. 7, 1984, PCT Pub. No. WO84/04355, PCT Pub. Date Nov. 8, 1984
PCT Filed Apr. 19, 1984, Ser. No. 682,048
Claims priority, application United Kingdom, Apr. 23, 1983, 8311084
Int. Cl.[4] F01M 9/10
U.S. Cl. 123—195 C 4 Claims

1. A machine cover comprising a main body having structure defining two apertures located adjacent one another, and a closure component which incorporates an inlet duct and which is adapted to cooperate with said structure so that the

inlet duct is aligned with either aperture whilst closing the other aperture, the closure component being reversible end-to-



end between two positions in which the inlet duct cooperates within a respective aperture.

4,608,951

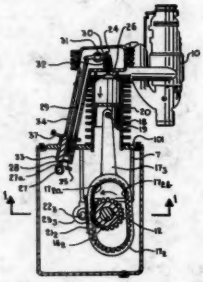
RECIPROCATING PISTON ENGINE

Ambrose White, 713 Avenue G, Kentwood, La. 70444

Filed Dec. 26, 1984, Ser. No. 686,451

Int. Cl.[4] F02B *75/32*

U.S. Cl. 123—197 AC **10 Claims**



1. In a reciprocating piston engine wherein there is included the combination of one or more pistons individually reciprocably mounted each within a cylinder,

an intake valve located within a cylinder through which fuel and air can be admitted into the cylinder, compressed and the fuel burned to drive a piston during a power stroke,

an exhaust valve located within a cylinder through which burned fuel can be exhausted by movement of a piston to expell the burned gases during an exhaust stroke,

a piston having a crown side and a side opposite said crown side to which a piston shaft is attached, the crown side of the piston facing into the cylinder wherein said intake and exhaust valves are located,

an elongated roller gear to which said piston shaft is attached, the elongated roller gear is open centered and has an inside face thereof provided with a continuous array of teeth,

a drive shaft,

a roller gear pinion operatively engaged with said drive shaft, rotation of which produces rotation of said drive shaft, said roller gear pinion being provided with a continuous array of teeth for continuous meshing engagement with the teeth on the inside face of said elongated roller gear, movement of a piston acting through a piston shaft and elongated roller gear producing rotation of said drive shaft via action upon roller gear pinion,

the improvement comprising, in said combination,

a pair of rails, one each of which is disposed on opposite sides of the teeth of said elongated roller gear,

a pair of rollers, one each of which is disposed on opposite sides adjacent and parallel to said the teeth of roller gear pinion, the rollers of the roller gear pinion contacting and rolling along the rails of said elongated roller gear to maintain a proper relationship and root clearance between the meshing teeth of an elongated roller gear and a roller gear pinion for effecting the continuous rolling and meshing engagement,

a pair of guide bar roller shafts, spaced apart, in-line and mounted in bearings upon the engine in generally parallel orientation with the drive shaft on alternately disposed sides of the elongated roller gear and roller gear pinion,

a guide bar mounted on the elongated roller gear on a side thereof faced toward said pair of guide bar roller shafts, the guide bar engaging the pair of guide bar roller shafts, such that reciprocating movement of the elongated roller gear produced by reciprocation of the piston within a cylinder produces a rocking movement of the elongated roller gear through a path about which said guide bar moves around said pair of roller bar guide shafts to maintain continuous rolling and meshing contact between said elongated roller gear and roller gear pinion, and rotation of the drive shaft.

4,608,952

BALANCER CONTROL DEVICE FOR MULTIPLE-CYLINDER FOUR-CYCLE ENGINE

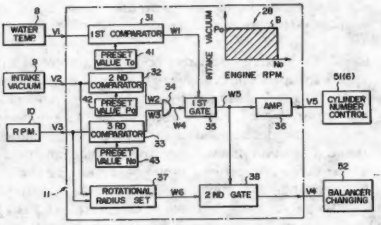
Shigeru Morita; Hideki Tanaka, and Kyoichi Umemura, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Japan

Filed Jul. 15, 1985, Ser. No. 754,997

Claims priority, application Japan, Jul. 18, 1984, 59-149860

Int. Cl.[4] F02D *17/00*; F16F *15/26*

U.S. Cl. 123—198 F **16 Claims**



1. In a multiple-cylinder four-cycle engine which can be operated in two-cylinder operation in which two cylinders are operated so that the power stroke of one cylinder occurs with a crank angle phase difference of 360° with respect to the power stroke of the other cylinder,

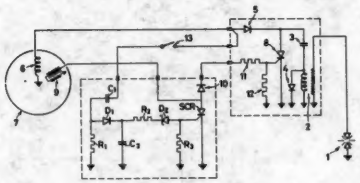
a balancer control device comprising a balancer which is driven during the two-cylinder operation of the engine to generate a primary vibration generating moment which reduces the primary vibration generating moment imparted to the engine structure due to explosion during the two-cylinder operation, an engine load detecting means for detecting engine load, an engine rpm detecting means for detecting the engine speed and a balancer changing means which changes the primary vibration generating moment of the balancer according to the operating condition of the engine so that the primary vibration generating moment of the balancer approximates the primary vibration generating moment of the engine structure due to explosion thereby suppressing the primary vibration generating moment of the engine structure over the entire operating range during the two-cylinder operation.

4,608,953

SAFETY INTERLOCK FOR A MOTOR VEHICLE ENGINE STARTING CIRCUITRY

Livio Benvenuti, La Rotta, Italy, assignor to Piaggio & C. S.p.A., Genua, Italy

Filed Nov. 16, 1984, Ser. No. 672,385
Claims priority, application Italy, Nov. 25, 1983, 23895 A/83
Int. Cl.[4] F02D 11/10
U.S. Cl. 123—335 1 Claim



1. A device for limiting the speed of an internal combustion engine having an electronic ignition circuit, comprising:

an alternating current generator driven by the rotation of the engine, said generator having a winding coil for supplying a voltage to the electronic ignition circuit and a pickup winding for controlling the sparking of the electronic ignition circuit; and

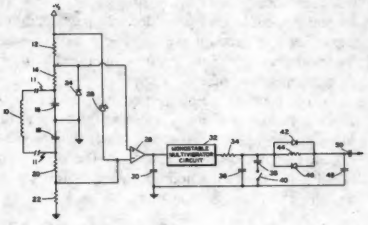
a speed-limiting circuit including a first capacitor, a first resistor, a first rectifying diode having an anode and a cathode, a lead connecting one terminal of said first capacitor to the anode of said first diode, a lead connecting the other terminal of said first capacitor to said winding coil, a lead connecting one side of said first resistor to the anode of said first diode, a lead connecting the other side of said first resistor to ground, a second capacitor, a lead connecting one side of said second capacitor to the cathode of said first diode, a lead connecting the other terminal of said second capacitor to ground, a second resistor, a lead connecting one side of said second resistor to the cathode of said first diode a Zener diode having an anode and a cathode, a lead connecting the cathode of said Zener diode to the other side of said second resistor, a third resistor, a lead connecting one side of said third resistor to the anode of said Zener diode, a lead connecting the other side of said third resistor to ground, an SCR having an anode and a cathode, a lead connecting the cathode of said SCR to the anode of said Zener diode, a lead connecting the cathode of said SCR to ground, a second rectifying diode, having an anode and a cathode, a lead connecting the anode of said second rectifying diode to the anode of said SCR, and a lead connecting the cathode of said second rectifying diode to said electronic ignition circuit, a lead connecting said pickup winding to the lead connecting said second rectifying diode to said SCR, whereby the voltage generated by the winding coil feeds said SCR after processing through said speed-limiting circuit so as to be proportional to said generator speed whereupon the signal from said pickup winding is fed through said second rectifying diode and into said electronic ignition circuit when the rotation of the engine is below a preset threshold magnitude and through said SCR to ground whenever said voltage generated by the winding coil exceeds the preset threshold magnitude.

4,608,954

INPUT CIRCUIT FOR AN ELECTRONIC VEHICLE SPEED CONTROL UNIT

Larry O. Gray, Laurinburg, N.C., assignor to Dana Corporation, Toledo, Ohio

Filed Apr. 23, 1984, Ser. No. 603,122
Int. Cl.[4] F02D 11/10
U.S. Cl. 123—352 36 Claims



1. An input circuit to an electronic speed control unit for a vehicle having an ignition system adapted to generate pulses of electrical current at a frequency proportional to engine speed comprising:

means responsive to each ignition system current pulse for generating a voltage differential signal;

biasing means for generating bias signals defining a predetermined voltage differential range;

differential amplifier means connected to said voltage differential signal generating means and said biasing means for generating an output signal when said voltage differential signal exceeds said predetermined voltage differential range; and

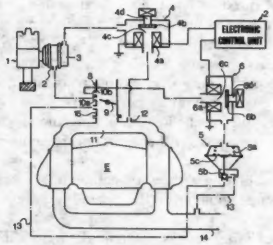
capacitive means connected to said voltage differential signal generating means for rejecting common mode signals superimposed on said voltage differential signal.

4,608,955

IGNITION TIMING CONTROL SYSTEM FOR AN AUTOMOTIVE ENGINE

Kiyoshi Ohtaki, Fuchu, and Kazuo Hara, Musashino, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1985, Ser. No. 768,890
Int. Cl.[4] F02P 5/10; F02M 25/06
U.S. Cl. 123—408 2 Claims



1. In an ignition timing control system for an automotive engine with an exhaust gas recirculation system having an exhaust gas recirculation passage and an exhaust gas recirculation valve operated by a vacuum operated actuator provided in the recirculation passage, the improvement comprising:

a primary vacuum-advance means responsive to the vacuum at a first vacuum port located at a position just above a

closed throttle position of an intake passage of the engine for advancing the ignition timing of the engine;

secondary vacuum-advance means responsive to the vacuum at a manifold vacuum port of the intake passage for advancing the ignition timing in addition to the operation of the primary vacuum-advance mechanism;

a first solenoid valve provided in a passage communicating secondary vacuum-advance mechanism with the manifold vacuum port;

a second solenoid valve provided in a passage communicating a second vacuum port of the intake passage with a vacuum chamber of the vacuum operated actuator for the exhaust gas recirculation valve;

an electronic control unit responsive to engine operating conditions in a low engine speed range except idling operation for closing the first and second solenoid valves to cut off the exhaust gas recirculation system and to cut off the passage for the first solenoid valve, thereby stopping the advancing of the ignition timing.

4,608,956

OPERATING APPARATUS FOR LEAN BURN INTERNAL COMBUSTION ENGINE

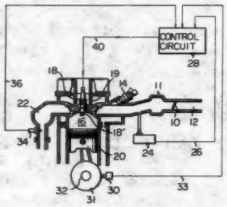
Kenji Katoh, Susono; Toshio Yamada, Mishima; Kenichiro Shindo; Souichi Matsushita, both of Susono, and Tokuta Inoue, Mishima, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Continuation of Ser. No. 502,640, Jun. 9, 1983, abandoned. This application Nov. 13, 1984, Ser. No. 671,013

Claims priority, application Japan, Aug. 17, 1982, 57-141715

Int. Cl.[4] F02P *5/14*

U.S. Cl. 123—417 **6 Claims**



1. An engine operating apparatus for an internal combustion engine supplied with a lean air-fuel mixture, said apparatus comprising:

a first lean sensor means in contact with exhaust gas from the engine for directly detecting an actual air-fuel ratio of the engine so as to obtain continuously varying signals indicating the detected air-fuel ratio;

a second sensor means for detecting at least one engine operating parameter, so as to obtain signals indicating the detected engine operating parameters;

a first calculating means for calculating the air-fuel ratio by using the signals from the operating parameter detecting means;

a second calculating means for calculating a basic ignition timing using signals from the operating parameter detecting means;

a third calculating means for calculating a difference between the air-fuel ratio calculated by the first calculating means and the air-fuel ratio actually and directly detected by the air-fuel ratio detecting means;

a fourth calculating means for calculating a correction value of ignition timing corresponding to the difference; and

a means for generating ignition of the engine at an ignition timing which is the sum of the basic ignition timing and the correction value.

4,608,957

AGGREGATE FOR SUPPLYING FUEL, PARTICULARLY FROM A SUPPLY CONTAINER TO AN INTERNAL COMBUSTION ENGINE OF A MOTOR VEHICLE

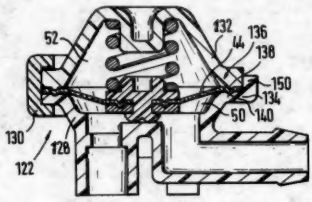
Ulrich Kemmner, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 572,921, Jan. 20, 1984. This application Oct. 25, 1985, Ser. No. 791,923

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1983, 3307241

Int. Cl.[4] F02M *39/00*

U.S. Cl. 123—467 **5 Claims**



1. In an aggregate for supplying fuel, particularly from a supply tank to an internal combustion engine of a motor vehicle, including an aggregate casing and a fuel feeding pump accommodated therein, and a pressure wave-clamping device, the pressure wave-clamping device comprising a housing, said casing having a fuel-outlet opening which opens into said housing; a diaphragm; said housing enclosing an interior space, said diaphragm subdividing said space into a first chamber and a second chamber, said first chamber having an inlet connected to an outlet of said pump, and an outlet; and pressure wave damping prestressed spring means positioned in said second chamber and supported on said diaphragm, said housing including a first housing shell and a second housing shell oppositely positioned to each other, said first and second housing shell being formed with flange-like peripheral rims opposing each other, said diaphragm being clamped between the peripheral rim of said first housing shell and the peripheral rim of the second housing shell, said diagragm having a central portion which is provided with two reinforcement means arranged opposite to each other relative to said diaphragm, one of said reinforcement means being located in said first chamber and another of said reinforcement means being located in said second chamber, said another reinforcement means having a centering shoulder for supporting said damping spring means, said diaphragm having an edge portion, the rim of the first housing shell having an annular bead, and the rim of the second housing shell having an annular groove adjusted to said bead, said edge portion of the diaphragm being held between said bead and said groove.

4,608,958

LOAD REACTANCE ELEMENT DRIVING DEVICE

Yasuyuki Sakakibara, Nishio, and Norihito Tokura, Aichi, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Sep. 19, 1983, Ser. No. 533,812

Claims priority, application Japan, Sep. 22, 1982, 57-164010; May 30, 1983, 58-94020

Int. Cl.[4] F02P *3/08*

U.S. Cl. 123—605 **2 Claims**

1. An ignition device for an internal combustion engine comprising:

a DC power source;

an ignition coil having a primary winding and a secondary winding;

ignition gaps connected to said secondary winding;

a capacitor connected in series with said primary winding;

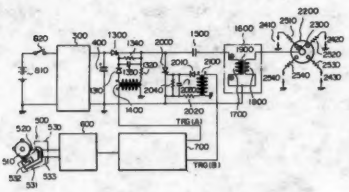
a first switching element comprising a thyristor and forming

a closed circuit with said primary winding, said capacitor, and said DC power source;

a second switching element comprising a thyristor and forming a closed circuit with said primary winding and said capacitor; and

a trigger signal generation means for operating in response to a supplied ignition instruction signal and generating a conduction signal to make alternately said first and second switching elements conductive, said conduction signal having a pulse width which is shorter than a half cycle of the resonance period of the reactance load and being supplied to gate terminals of the first and second switching elements, the interval of said alternate conductions of the first and second switching elements being longer than a half cycle of the resonance period of the reactance load, said trigger signal generation means comprising:

(a) pulse signal genration circuit for repetitively generating pulse signals while said ignition instruction signal is being generated;



(b) a first monostable circuit connected to said pulse signal generation circuit for generating a first trigger pulse having a pulse width shorter than said repetitive pulse signal in synchronization with one of the leading and the trailing edges of said repetitive signal;

(c) a second monostable circuit connected to said pulse signal generation circuit for generating a second trigger pulse in synchronization with the other of the leading and trailing edges of said repetitive signal;

(d) a first and a second pulse transformer having input terminals connected to said first and second monostable circuits; and

(e) a first and a second noise elimination circuit connected between the output terminal of said first pulse transformer and the gate of said first switching element, and between the output terminal of said second pulse transformer and the gate of said second switching element.

4,608,959

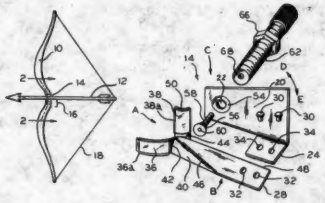
ARROW REST IN COMBINATION WITH BOW

Fred A. Seynaeve, 3220 Rte. 67, Milan, Ill. 61264

Continuation of Ser. No. 508,896, Jun. 27, 1983, abandoned. This application May 1, 1985, Ser. No. 729,083

Int. Cl.[4] F41B *5/00*

U.S. Cl. 124—24 R **7 Claims**



1. An arrow rest in combination with a bow and a string on said bow, said string defining a verticai direction when said bow is in use; said arrow rest comprising a mounting plate attached to said bow; a vertical vector arm and a horizontal vector arm; a cantilever leaf spring having a plurality of bends, with the cantilever leaf spring including one surface which is parallel to the bow and a further surface separated from said one surface by one of said bends; said further surface having an end attached to the mounting plate at 45° with respect to each of the bow, the vertical vector arm and the horizontal vector arm, said further surface extending downwardly and away from the mounting plate; said cantilever leaf spring terminating in the vertical and horizontal vector arms; the orientation of the vector arms being set at 90° with respect to each other, with one of said vector arms parallel to and the other of said arms perpendicular to the bow string; said vector arms being positioned so that when an arrow is placed between them and fired from such position, random motions resulting from said firing are transferred to at least one of the vector arms as the arrow is being fired and the plurality of bends formed in the cantilever leaf spring give flexing in some directions and stiffness in other directions, these bends causing the leaf spring to receive the force from the random motion of the vector arms to transfer to said arrow a recoil force, because of the uniformity of recoil, said transfer always being in a single preferred direction regardless of the randomness of said vector arm motions.

4,608,960

PANELS OR MOULDED ELEMENTS DESIGNED AS HEAT-EXCHANGERS

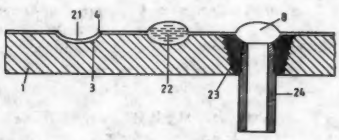
Reinhard Hering, Via Matteo da Campione 5, CH-6911 Campione/Lago di Lugano, Switzerland

Filed Dec. 12, 1983, Ser. No. 560,191

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1982, 3246541

Int. Cl.[4] F24J *2/02*

U.S. Cl. 126—431 **12 Claims**



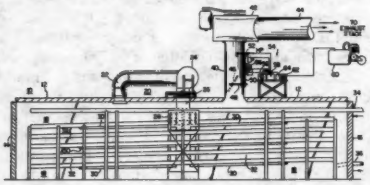
1. A heat exchanger plate comprising a fluid absorbable base plate-shaped member of fiber or chip heat insulating material mixed with binding agent and having an upper surface; said fiber insulating material forming an inflexible integrated and inseparable binding material that is rigid and stressable; two vulcanizable elastomeric fluid tight layers connected to said upper surface of said base plate-shaped member; semi trough-shaped hollow spaces extending in predetermined directions on said base member between said elastomeric layers for conducting fluids through said through-shaped hollow spaces; said trough-shaped spaces comprising depressions molded into said upper surface, one of said elastomeric layers conforming substantially to said depressions and being intimately united with the material of said base member at all contacting areas; the other one of said elastomeric layers being intimately united with said one elastomeric layer except at areas defined by said hollow spaces for conducting fluids and bulging out to form said hollow spaces; said heat exchanger plate comprising further a structural element having combined stress carrying and insulating characteristics.

4,608,961

EXHAUST DAMPER CONTROL

William E. Lanham, Jr., Decatur, and Stephen R. Smith, Tucker, both of Ga., assignors to Lanham Machinery Company, Inc.

Filed Apr. 30, 1984, Ser. No. 605,605
Int. Cl.[4] A21B *1/00*; F23L *3/00*
U.S. Cl. 126—21 A **9 Claims**



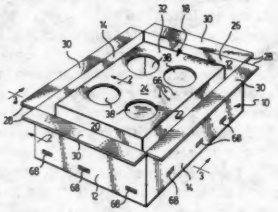
1. An improved baking oven of the type in which oven enclosure means including a side enclosure and a roof define a baking space, means within said oven enclosure means to carry bakery goods into said baking space to be baked therein and to carry the baked goods out from said oven enclosure means, heating means within said oven enclosure means for heating the air in said baking space for baking the bakery goods, and an air exhaust duct having a mouth communicating with said baking space for conveying exhaust air from near the roof of said oven enclosure means to an exhaust stack venting to the atmosphere, means connected to said exhaust duct for forcing a draft of exhaust air therethrough and including a fan for forcing a draft of exhaust air through said duct; the improvement wherein said exhaust duct further includes exhaust air regulating means operatively disposed between the mouth of said duct and said fan for ensuring a constant mass flow rate of said exhaust air through said exhaust duct, notwithstanding changes in temperature and pressure in the ambient air and not withstanding wind action on said exhaust stack, said exhaust air regulating means including an exhaust damper within said duct and movable between open and closed positions to regulate air flow in said duct, mass flow rate sensing means disposed in said duct and providing a signal representative of said air mass flow rate, and damper control means having an input coupled to said mass flow rate sensing means and a control linkage coupled to said damper for controlling the movement of said damper in accordance with the air mass flow rate as sensed by said mass flow rate sensing means.

4,608,962

GLASS COUNTERTOP RANGE MOUNTING

W. S. Dominic Ng, Kitchener, Canada, assignor to Camco Inc., Mississauga, Canada

Filed Nov. 29, 1985, Ser. No. 802,730
Claims priority, application Canada, Mar. 22, 1985, 477242
Int. Cl.[4] F24C *15/10*
U.S. Cl. 126—211 **4 Claims**



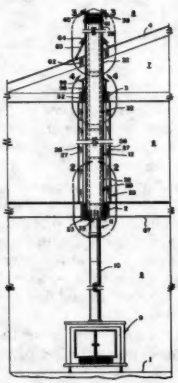
1. A glass top countertop range structure comprising an outer, upwardly opening box structure having a bottom panel and peripheral walls with peripheral mounting flange means extending substantially parallel to the bottom wall outward from said peripheral walls adjacent the upward opening end of said box, an inner downwardly opening box structure having peripheral walls extending from a top panel, said inner box structure being telescoped within said outer box structure to provide a peripheral air space around said outer box structure between said inner and outer box structures, said inner box structure being supported on said bottom wall by said peripheral walls of said inner box structure so that the upper surface of said top panel is in substantially the same plane as the upper surface of said peripheral mounting flange means, a glass top overlying said mounting flange and said top panel and in face to face contact therewith, cooperating heating element receiving passages through said top panel and said glass panel and a heating element mounted in each pair of said cooperating passages by heating element mounting means.

4,608,963

THERMALLY BALANCED AIR FLOW CHIMNEY

Donald M. Townsend, Mill Valley, and John R. Jacklich, Palo Alto, both of Calif., assignors to Simpson Dura Vent Company, Inc., Vacaville, Calif.

Filed Jan. 4, 1985, Ser. No. 688,714
Int. Cl.[4] F23L *17/02*
U.S. Cl. 126—307 R **9 Claims**



1. An on demand air cooled three wall chimney system for a building sourcing cooling air from within said building comprising:

a. a starter chimney member having a first inner sheet metal wall forming a first imperforate elongated open ended chamber for the passage of flue gases from a fire source;

b. said starter chimney member having a first intermediate sheet metal wall surrounding and generally evenly spaced from said first inner wall and forming therewith a first insulation chamber;

c. said starter chimney member having a first outer metal wall surrounding said first intermediate wall forming a first open ended air passage chamber;

d. first insulation material substantially filling said first insulation chamber in said starter chimney member;

e. air passage means formed only in said lower portion of said starter chimney member permitting said air within said building to enter said first air passage chamber aajacent the lower end of said starter chimney member for movement only upwardly through said first open ended air passage;

f. an upper chimney member having a second inner sheet metal wall in over lapping registration with said first inner sheet metal wall forming a second imperforate elongated open ended chamber for the passage of flue gases from

said first imperforate elongated open ended chamber to the atmosphere outside said building;

g. said upper chimney member having an intermediate sheet metal wall surrounding and generally evenly spaced from said inner wall and forming therewith a second insulation chamber;

h. said upper chimney member having a second outer metal wall surrounding said second intermediate wall forming a second open ended air passage chamber positioned for communication with said first open ended air passage chamber;

i. second insulation material substantially filling said insulation chamber in said upper chimney member; and

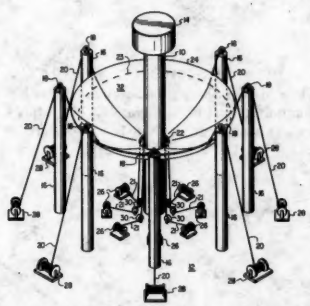
j. a chimney cap means mounted externally of said building having a conduit in communication only with said second imperforate open ended chamber of said upper chimney for venting flue gases to atmosphere and a passage in communication only with said second open ended air passage chamber of said upper chimney member for venting said cooling air to atmosphere separately from said flue gases.

4,608,964

TENSION SOLAR MIRROR

William P. Russo, Madison, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Nov. 15, 1984, Ser. No. 671,679
Int. Cl.[4] F24J *2/10*
U.S. Cl. 126—438 **12 Claims**



1. A solar collector comprising a central tower having a solar receiver thereon; a plurality of tension towers positioned concentrically about the central tower; a rigid inner ring disposed about said central tower and sized to permit vertical movement relative to said central tower; a plurality of cables extending between the inner ring and the tops of each of the tension towers; and a reflectively-coated sheet of flexible material attached to the upper surface of said of cables; whereby the action of gravity on said cables and said sheet form a concave reflector for focusing solar energy onto the solar receiver.

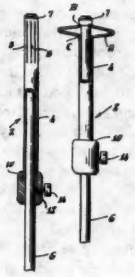
4,608,965

ENDOSCOPE RETAINER AND TISSUE RETRACTING DEVICE

William E. Anspach, Jr., 1349 S. Killian Dr., Lake Park, Fla. 33403, and Michael S. Toborowsky, 4774 Apt. A Orleans Ct., W. Palm Beach, Fla. 33406

Filed Mar. 27, 1985, Ser. No. 716,542
Int. Cl.[4] A61B *1/00*
U.S. Cl. 128—4 **10 Claims**

1. An endoscope retainer and tissue retracting device including a soft plastic cylindrical tube for slidably mounting on the probe portion of an endoscope, the end of the soft plastic cylindrical tube having a slightly reduced diameter to have a friction holding fit over the end of an endoscope, a plurality of slits located around the soft plastic cylindrical tube adjacent the end of reduced diameter, said slits forming a plurality of flexible strips which bend to extend radially outwardly when their ends are brought together by sliding the other end of the



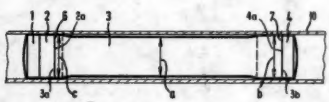
soft plastic cylindrical tube along on the probe portion of an endoscope towards the end having a friction holding fit over the end of an endoscope, means for fixing the other end of the soft plastic cylindrical tube to an endoscope with the strips extending radially outwardly.

4,608,966

ROD LENS AND ENDOSCOPE INCLUDING THE SAME

Karl Storz, Postfach 400, Mittlestrasse 8, Tuttlingen, Fed. Rep. of Germany

Filed Mar. 16, 1982, Ser. No. 358,657
Int. Cl.[4] A61B *1/06*
U.S. Cl. 128—4 **6 Claims**



1. A rod lens system for close-fitting installation in the inner circularly cylindrical wall of the tube of an endoscope, comprising a rod lens portion, and a pair of next lens portions, said rod lens portion having a pair of end faces, and each said next lens portion having an abutment face, each end face of said rod lens portion having cemented thereto an abutment face of a said next lens portion, each portion having an end region extending for a substantial distance from said faces which has the same diameter as the inside wall of said tube so as to be embraced by it, said rod lens portion having a recessed region between its said end regions which has a diameter that is substantially smaller than the diameter of said end regions, so as not to contact said tube, all cross-sections of all of said lens portions taken normal to said axis being circular, and the length of the rod lens portion being substantially greater than any diameter thereof.

4,608,967

PAT ON THE BACK APPARATUS

Ralph R. Piro, 676 Centre Ave., Lindenhurst, N.Y. 11757

Filed May 31, 1985, Ser. No. 739,669
Int. Cl.[4] A61H *7/00*
U.S. Cl. 128—61 **4 Claims**

1. A self-congratulatory apparatus comprising:

a shoulder block having an upper and lower surface and a front end and a back end,

said lower surface of said shoulder block being contoured

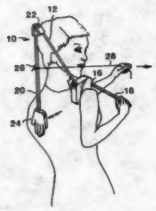
to be received by a shoulder of a person utilizing said apparatus;

said upper surface of said shoulder block containing a first attachment means for receiving said first support member, said attachment means being positioned at an angle with respect to said shoulder block, and said front end of said shoulder block containing a second attachment means for receiving a second support member;

said first support member having a first end and a second end, said first end of said first support member being fixedly attached to said first attachment means of said shoulder block, said first support member extending from said shoulder block in an upwardly direction away from and behind the back side of said shoulder block such that said second end of said first support member is located in a position vertically higher than said upper surface of said shoulder block and horizontally displaced behind the back side of said shoulder block;

a second support member having a first end and a second end, said first end being fixedly attached to said second attachment means of said shoulder block, and said second support member extending outwardly from said front side of said shoulder block;

a pivot member having a first connecting means and a second connecting means, said first and second connecting means being pivotible with respect to each other, and said pivot member being fixedly attached to said first support member by said first connecting means of said pivot member;



a third support member having a first end and a second end, said first end of said third support member being fixedly attached to said second connecting means of said pivot member, and said third support member extending in a direction downwardly from said pivot member, such that said second end of said third support member is positioned vertically lower than said first end of said third support member, and said third support member being pivotable with respect to said first support member;

a simulated hand member fixedly attached to said second end of said third support member and extending downwardly therefrom, said simulated hand being pivotable with respect to said first support member; and

a flexible connection means having a first end and a second end, said first end being attached to said third support member and said flexible connection means extending therefrom such that in operation said flexible connection means may be drawn in a direction in front of said person utilizing said apparatus such that said simulated hand contacts the back of said person.

4,608,968

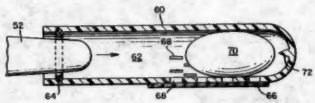
GUM MASSAGING DEVICE WITH INTERNAL DISPENSER

Paul M. Rosofsky, Willingboro, N.J., assignor to Oral Ease Inc., Willingboro, N.J.

Division of Ser. No. 350,198, Feb. 19, 1982, Pat. No. 4,486,109. This application Sep. 19, 1984, Ser. No. 652,303

Int. Cl.[4] A61H *13/00*

U.S. Cl. 128—62 A **17 Claims**



1. A device for massaging gums of a user, said device being connectable to an end of a handle, said device comprising:

a carrier having an internal cavity shaped to mate with and releaseably engage an end of a handle, the carrier having at least one wall with a plurality of openings formed therein;

a container of liquid disposed in said internal cavity;

retaining means for retaining the container in the internal cavity of the carrier so that the liquid in the container is dispensed when the end of the handle is inserted into the internal cavity of the carrier; and

a material covering the openings in said at least one wall for absorbing liquid being dispensed and for massaging the gums of the user.

4,608,969

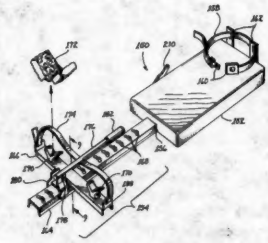
PORTABLE TRACTION APPARATUS

Jerry F. Hamlin, 874 Shirley La., Boulder City, Nev. 89005

Continuation-in-part of Ser. No. 472,211, Mar. 4, 1983, abandoned. This application Dec. 13, 1984, Ser. No. 681,233

Int. Cl.[4] A61F *5/00;* **A61H** *1/00*

U.S. Cl. 128—71 **6 Claims**



1. Portable traction apparatus, comprising:

a first body supporting portion;

a second foot restraining portion;

hinge means joining said first and second portions and allowing said apparatus to be extended for use or folded for storage;

means for securing a user's head to said first portion;

means for securing a user's feet to said second portion, said means for securing a user's feet comprises a foot support beam member, recesses in said foot support beam member adapted for receiving a user's feet, and strap means for securing the user's feet in said recesses;

means for adjusting the length of said apparatus;

means accessible to the user for further lengthening said apparatus to apply traction to a user fastened thereto, said means accessible to the user for applying traction comprises a ratchet operated screw assembly; and

means for tightening said strap means for securing the user's

feet, said means for tightening comprises a pivoted rod centrally mounted on said foot support beam member movable between a release position and a closed position wherein said rod in said closed position clinches said strap means for securing the user's feet toward said foot support beam member between said recesses.

4,608,970

ADJUSTABLE ORTHOPEDIC SHOE FOR TREATING FOOT MALFORMATIONS IN INFANTS

Thierry Marck, 31 Quai de Warrens, and Gérard M. Dunoutier, 13, Rue des Allobroges, both of Sallanches, France (F74700)

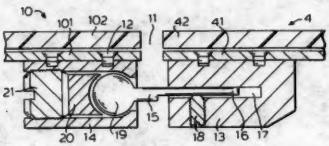
PCT No. PCT/FR84/00164, § 371 Date Feb. 28, 1985, § 102(e) Date Feb. 28, 1985, PCT Pub. No. WO85/00285, PCT Pub. Date Jan. 31, 1985

PCT Filed Jul. 2, 1984, Ser. No. 711,571

Claims priority, application France, Jul. 4, 1983, 83 11779

Int. Cl.[4] A61F *5/00*

U.S. Cl. 128—80 J **12 Claims**



1. An orthopedic shoe for correcting foot malformations in infants comprising:

(a) a rigid posterior part;

(b) a rigid anterior part separate from said posterior part;

(c) a connecting piece interconnecting and securing with respect to one another said posterior and anterior parts, said connecting piece being in the form of a rod having a first end associated with said posterior part and a second end associated with said anterior part; and

(d) means associated with said rod which, without deforming the rod, permits relative displacement with at least three degrees of freedom of said posterior and anterior parts and which is securable to immobilize said parts in position.

4,608,971

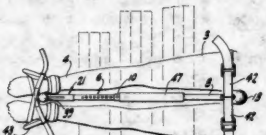
EMERGENCY LEG SPLINT

Anthony G. Borschneck, 15603 Prospect Dr., Redding, Calif. 96001

Filed Jul. 16, 1985, Ser. No. 755,634

Int. Cl.[4] A61F *5/04*

U.S. Cl. 128—85 **13 Claims**



1. An emergency leg splint comprising a housing tube, means engaging one end portion of said housing tube for seating on the ischial tuberosity of a patient, an ankle tube movably projecting from the other end portion of said housing tube, a pulley rotatably mounted within said housing tube, a cable having two ends and trained around said pulley, a spring within said housing tube, means for connecting one end of said spring to said housing tube, means for connecting the other end of said spring to one end of said cable, and means for connecting the other end of said cable to said ankle tube.

4,608,972

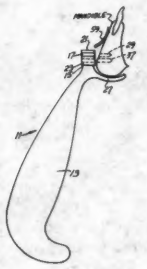
METHOD OF APPLYING A CHIN IMPLANT, DRILL GUIDE TOOL AND IMPLANT

Irwin A. Small, 6861 Orinoco Cir., Birmingham, Mich. 48010

Filed Feb. 19, 1985, Ser. No. 702,595

Int. Cl.[4] A61F *5/04*

U.S. Cl. 128—92 EB **4 Claims**



1. A drill guide or a chin implant adapted for drilling a pair of apertures in accurately located positions into a jawbone having a median plane, comprising:

an elongated formed handle having a central vertical axis;

a stabilizer body formed on an upper end of said handle having at least one surface adapted to engage exposed bone of a mandible in a vertical plane;

said body including a center locater means aligned with said vertical axis for proper registry with said median plane; and

wherein a pair of spaced apart drill guide bores extend through said body at a predetermined angle to said vertical axis and are located upon opposite sides of said vertical axis;

said body having a pair of laterally spaced arms located on each side of said vertical axis and projecting horizontally from a bottom surface of said body, said arms adapted for operative locating engagement with a horizontal surface of the human chin whereby a pair of bores may be drilled into said jaw bone at predetermined lateral distances on opposite sides of said vertical axis and at a predetermined vertical distance from the horizontal surface of the chin.

4,608,973

PATIENT RESTRAINING DEVICE

Frank H. Green, 516 N. Morgan St., Rushville, Ind. 46173, and David L. Green, 20 Oakshore Dr., Bratenahl, Ohio 44108

Filed Jan. 25, 1984, Ser. No. 573,692

The portion of the term of this patent subsequent to Nov. 29, 2000, has been disclaimed.

Int. Cl.[4] A61F *31/00*

U.S. Cl. 128—134 **1 Claim**

1. A patient restraint device for use by a patient to be restrained on a bed against excessive vertical and horizontal movement with respect to said bed, and for alerting nursing personnel of impending excessive movement before said patient is endangered thereby, comprising:

a vest securely received about the upper body of said patient;

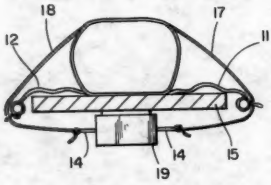
an alarm;

bidirectional alarm activating switch means located beneath and fixed to said bed out of reach of the patient, and responsive to pulling force applied thereto in either of two opposite horizontal directions, for activating said alarm in

response to pulling force exceeding a predetermined limit applied in any of said opposite horizontal directions;

means for translating vertical or horizontal motion of said patient into pulling force applied in at least one of said opposite first and second horizontal directions, said translation means including:

a first monitor strap having first and second ends, the first end securely attached to said vest, said first strap extending from said vest over one side of said bed, the second end thereof connected to said bidirectional



alarm activating switch means such that tension in said first monitor strap exerts a pulling force in the first direction; and

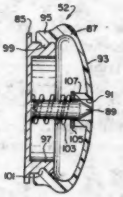
a second monitor strap having first and second ends, the first end securely attached to said vest, said second strap extending from said vest over the other side of said bed, the second end thereof connected to said bidirectional alarm activating switch means such that tension in said second monitor strap exerts a pulling force in the second direction.

4,608,974

TONGUE THERAPY DEVICE

Robert J. Sicurelli, Jr., 1990 E. 4th St., New York, N.Y. 11223

Filed Oct. 22, 1985, Ser. No. 790,267
Int. Cl.[4] A61F *5/56, 13/00*
U.S. Cl. 128—136 **27 Claims**



1. A tongue therapy device to prevent tongue thrust during swallowing and to train the tongue to assume its proper posture on the palate comprising:

a base having one face adapted for attachment to the lingual side of a tooth;

a tongue irritating element attached to the other, lingual face of said base; and

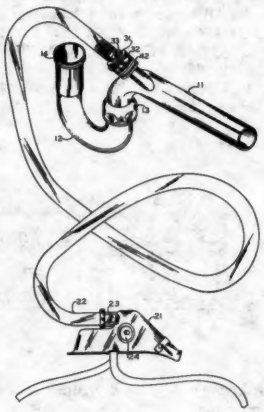
a protective element means associated with said tongue irritating element and mounted on said base to keep the tongue away from the irritating element until the tongue extends beyond a given position in the mouth said protective element means having a normal position and a displaced position, the protective element means preventing the irritating element from contacting the tongue in said normal position, and said irritating element being contactable by the tongue in the displaced position of said protective element means.

4,608,975

EMERGENCY BREATHING APPARATUS

Raymond A. Tannatta, 989 Balltown Rd., Schenectady, N.Y. 12309

Filed Aug. 9, 1983, Ser. No. 521,586
Int. Cl.[4] A62B *7/00*
U.S. Cl. 128—202.13 **7 Claims**



1. An emergency breathing apparatus for use in a building having a vented plumbing system which includes a sink, a sink trap having two open ends and connected to the sink at one end, and a plumbing and venting line in fluid communication with fresh air at the exterior of said building, said apparatus comprising:

at least one breathing mask having exhaust valve means;

a connecting sink drainage pipe section having a first open end and a second open end and defining an open-ended tubular outlet extending out from the exterior surface of said pipe section, said tubular outlet disposed adjacent the first end of said pipe section with the free end located above the other open end of said outlet which is connected to said pipe section, said first end of said pipe section having means for attaching said first end directly to the other end of the sink trap and the second end of said pipe section have means for attaching said second end directly to the plumbing and venting line;

connecting means disposed at the free open end of said tubular outlet;

removable cap means adapted for attachment to the connecting means for sealing the free open end of said outlet from the atmosphere surrounding said pipe section when the pipe section, in combination with the sink trap and plumbing and venting line, is being used for plumbing; and

at least one flexible conduit having a first open end connected to the interior of said at least one mask and a second open end adapted for attachment to the connecting means during emergency use, when the atmosphere in the interior of said building and thereby surrounding said pipe section is unfit for breathing whereby fresh air from the vented plumbing system is able to pass into said mask from the plumbing and venting line through said pipe section and said flexible conduit.

4,608,976

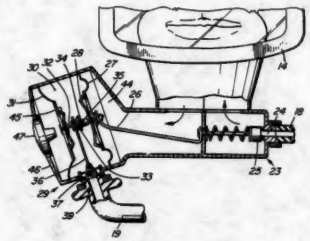
BREATHING PROTECTIVE APPARATUS WITH INHALATION AND EXHALATION REGULATOR

Les Suchy, North Vancouver, Canada, assignor to CanOcean Resources, Ltd., Canada

Continuation of Ser. No. 348,871, Feb. 16, 1982, abandoned. This application Sep. 10, 1984, Ser. No. 649,158

Int. Cl.[4] A62B *7/04*

U.S. Cl. 128—204.26 **4 Claims**



1. A breathing protective apparatus including a facemask with an inhalation/exhalation regulator comprising:

a body having an inlet port adapted to be connected to a source of compressed breathable gas, an exit port adapted to be connected to a source of negative pressure and a facemask port, said ports being in communication with each other and said facemask being connected to said facemask port;

said body enclosing an inhalation diaphragm and an exhalation diaphragm substantially parallel thereto to define an exhaust chamber therebetween, said diaphragms having a certain degree of resiliency, said exit port being located between said diaphragms in communication with said exhaust chamber;

an inlet valve mounted in said inlet port;

an exhaust valve means mounted in said exit port between the inhalation and exhalation diaphragms;

said inhalation diaphragm defining an inhalation chamber in free communication with the facemask;

said exhaust valve means including a valve head mounted for tilting movement between a position closing the exit port and tilted position opening the exit port, a stem extending from said valve head to a position between both diaphragms, an actuator rod mounted on and extending from the central portion of the exhalation diaphragm toward the central portion of the inhalation diaphragm and having lost motion connection to the exhaust valve stem so that movement of said exhalation diaphragm toward said inhalation diaphragm will not cause opening of the exhaust valve means, but movement of the exhalation diaphragm in the opposite direction will cause opening of the exhaust valve;

said exhaust valve being tiled to its open position soley by the movement of said exhaust diaphragm and moved to its closed position solely by the force of said negative pressure acting upon said valve head;

means connecting the inhalation diaphragm to said inlet valve for controlling the supply of gas to said facemask;

check valve means for one-way communication from said inhalation chamber to said exhaust chamber;

said diaphragms being mounted so they can be flexed and positioned with respect to each other such that flexing of said exhalation diaphragm toward said inhalation diaphragm causes movement of the exhaust valve means to its closed position simultaneously causes the distal end of the actuator rod to contact and to move the central portion of the inhalation diaphragm and to cause slight movement of said inhalation valve means which causes compressed gas to flow into said body and causes a slight increase in pressure therein which also pressurizes said exhaust chamber via said check valve means, said lost motion connection allowing said exhalation diaphragm to flex in said opposite direction a slight distance without opening said exhaust valve thereby allowing said inhalation diaphragm to move the same distance via said actuator rod to close said inhalation valve means;

whereby, as said body is under slight increased pressure, upon exhalation effort by a user, exhaled gas flows into the exhalation chamber and through the check valve means to the exhaust chamber to apply pressure on said exhalation diaphragm causing it to flex away from said inhalation diaphragm thus tilting and opening said exhaust valve means so that the exhaled gas is exhausted out the exit port and the negative pressure in said facemask port causes flexing of the inhalation diaphragm to open the inlet valve via the connecting means, thus admitting a fresh supply of breathable gas to the facemask.

4,608,977

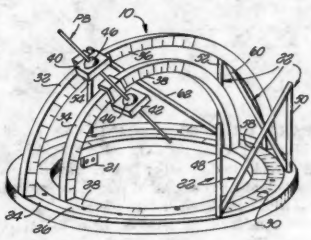
SYSTEM USING COMPUTED TOMOGRAPHY AS FOR SELECTIVE BODY TREATMENT

Russell A. Brown, 2826 South 2420 East, Salt Lake City, Utah 84109

Continuation of Ser. No. 70,571, Aug. 29, 1979, abandoned. This application Dec. 20, 1982, Ser. No. 450,955

Int. Cl.[4] A61B *17/00*

U.S. Cl. 128—303 B **31 Claims**



1. A method of treating the interior of a body at a specific target location, comprising:

rigidly affixing a support means to the body;

fastening a graphic reference means to said support means to provide varying data to a computed tomography (CT) scanner to index scan in relation to said support means;

scanning said body and said support means with a computed tomography (CT) scanner to provide data representative of scan slices through said body and said reference means; and

computing a course to said target location using said data representative of scan slices.

4,608,978

METHOD AND APPARATUS FOR PHOTOEPILTION

Carol B. Rohr, Lincolnwood, Ill., assignor to Carol Block Limited, McHenry, Ill.

Filed Sep. 26, 1983, Ser. No. 535,857

Int. Cl.[4] A61N *5/00*

U.S. Cl. 128—303.1 **10 Claims**

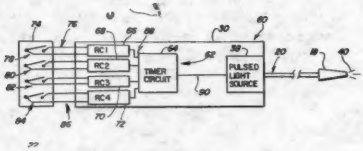
1. A method of photoepilation of a plurality of hair bodies of at least one type from a patient, comprising:

A. providing an apparatus having a flash lamp that sources light energy to the tip of a probe, and a control circuit including means for providing pulses of electrical energy to said flash lamp for causing the lamp to flash to obtain sequential, like, timed and spaced incremental pulses of light energy, the control circuit including a manually actuable switch assembly for energizing the control circuit to provide said pulses of electrical energy and said

pulses of light energy for a selectable period, the length of the period being indpendent of the length of time of actuation of the switch assembly;

B. selecting a certain period corresponding to the proper quantity of light energy in the form of timed and spaced pulses to be sourced at said tip to effect lifelessness in said particular type of hair body;

C. placing said tip properly in the vicinity of a hair to be removed;



D. actuating said switch assembly for a length of time independent of said period; and

E. repeating said steps C and D for said plurality of hair bodies,

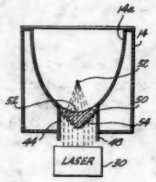
F. so that once the certain period is selected, said proper quantity of light energy automatically is provided to said probe tip independent of the length of time that said switch assembly is actuated.

4,608,979

APPARATUS FOR THE NONINVASIVE SHOCK FRAGMENTATION OF RENAL CALCULI

Robert E. Breidenthal, Seattle; Daniel E. Lotz, and David A. Russell, both of Kirkland, all of Wash., assignors to Washington Research Foundation, Seattle, Wash.

Filed Feb. 22, 1984, Ser. No. 582,271
Int. Cl.[4] A61B *17/22*
U.S. Cl. 128—303.1 **4 Claims**



1. Apparatus for use in the shock fragmentation of a concretion within a living body comprising:

a waveguide having a truncated ellipsoidal inner surface and first and second focal points, said first focal point being located within said waveguide, said second focal point being located beyond the truncated extent of said waveguide and adapted to be aligned with said concretion, said waveguide having a bore extending therethrough, said waveguide being adapted to receive a medium for producing a shock wave in the presence of a focused energy beam;

laser means for producing an energy beam having a predetermined minimum energy level and a predetermined duration; and

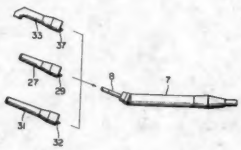
a lens mounted in the bore of said waveguide adjacent said ellipsoidal inner surface, said lens focusing said energy beam to said first focal point, said lens being reflective of the shock wave produced within said waveguide.

4,608,980

LASER HAND PIECE

Takao Aihara, Tokyo, Japan, assignor to Osada Electric Co., Ltd., Tokyo, Japan

Filed Apr. 13, 1984, Ser. No. 599,762
Int. Cl.[4] A61B *17/36*
U.S. Cl. 128—303.1 **7 Claims**



1. A laser hand piece for supplying laser light to a body part for cutting and drilling the same, comprising:

a shank having a distal end;

fiber holder means secured to said shank at the distal end thereof, said fiber holder means having a distal end;

an optical fiber extending through said shank and said fiber holder means and terminating at the distal end of said fiber holder means, said optical fiber being adapted to receive said laser light from laser light transmission means;

a head including laser light converging means for converging laser light from said optical fiber onto said body part; and

head attachment means secured to the distal end of said shank for releasably attaching said head to said shank in surrounding relation to said fiber holder means, said head attachment means including an annular guide hole formed adjacent the distal end of said shank and which extends axially in line in the direction of the center line of said fiber holder means, a front end guide hole extending radially outward of the front end of said annular guide hole, a rear end guide hole which extends radially outward of the rear end of said annular guide hole, a slider slidably positioned in said annular guide hole and having leading and rear inclined ends, an engaging member slidably positioned in said front end guide hole and which engages with said inclined leading end of said slider, an arresting member slidably positioned in said rear end guide hole and which engages with said inclined rear end of said slider, an attachment ring positioned around said rear end guide hole, a hole engageable with said arresting member formed in an inner wall surface of said attachment ring, and a circumferential groove formed in an inner wall surface at the proximal end of said head in surrounding relation to said front end guide hole.

4,608,981

SURGICAL STAPLING INSTRUMENT WITH STAPLE HEIGHT ADJUSTING MECHANISM

Robert G. Rothfuss, Bellevue, Ky., and David K. Kuhl, Cincinnati, Ohio, assignors to Senmed, Inc., Cincinnati, Ohio

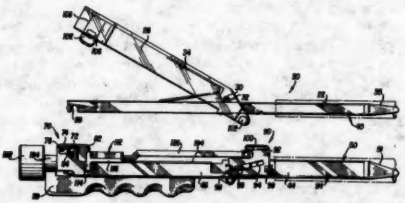
Filed Oct. 19, 1984, Ser. No. 662,908
Int. Cl.[4] A61B *17/11*
U.S. Cl. 128—305 **21 Claims**

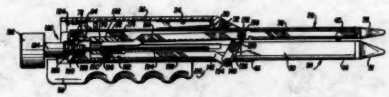
12. A surgical stapling instrument comprising:

first and second cooperating elongate jaw members, one of said jaw members including a staple cartridge adapted to receive at least two laterally spaced longitudinal rows of staples and provided with staple drivers for driving the staples from said cartridge, and said other jaw member including an anvil adapted to form said staples,

a pusher block slidably mounted for longitudinal movement along one of said jaw members and provided with a pair of staple pusher bars including cam surfaces engageable with said staple drivers for sequentially driving the staples from said cartridge and forming the staples against said anvil to produce a pair of laterally spaced staple rows in the tissue,

a knife blade adjustably connected to said pusher block, said knife having a cutting edge oriented at an angle relative to said elongate jaw members,





first and second jaw support members mounted on said knife blade for engaging said elongate jaw members as said pusher block is advanced to provide local support to said jaw members, and

adjusting means for varying the vertical spacing between said jaw members and for adjusting the angular orientation of said knife blade to vary the vertical spacing of said jaw support members to select different closed staple heights to be produced when the staples are formed.

4,608,982

FORCEPS

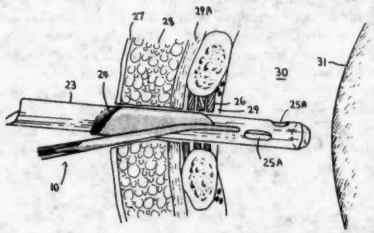
Clifford W. Pollard, 106 Anzac Ave., Redcliffe, Queensland, Australia (4020)

Filed Jun. 28, 1985, Ser. No. 749,816

Claims priority, application Australia, Mar. 7, 1984, PG5810

Int. Cl.⁴ A61B *17/28*

U.S. Cl. 128—321 **3 Claims**



1. Surgical forceps for use in association with a catheter for gaining access to a body cavity so as to drain fluid therefrom, said forceps including:

(i) a pair of elongate members pivotally attached to each other at a common intersection point thereby providing one set of mutually adjacent ends comprising finger loops and another set of mutually adjacent ends comprising a pair of opposed blunt dissection jaws for flunt dissection of tissue blocking access to said body cavity, said blunt dissection jaws each having a free end and said free ends abutting in an operational position thereof to facilitate said blunt dissection of said tissue; said common intersection point being located nearer the blunt dissection jaws than said finger loops and said elongate members forming said blunt dissection jaws initially diverging from each other adjacent the common intersection point and subsequently converging to form said free ends; and

(ii) a retaining passage formed by opposed channel shaped projections on each elongate member, each channel shaped projection being spaced from and located rearwardly of the free end of the blunt dissection jaw of the associated elongate member and projecting outwardly from the plane of the blunt dissection jaws.

4,608,983

GENERATION FOR SHOCK WAVES FOR CONTACTLESS DESTRUCTION OF CONCREMENTS IN A LIVING BEING

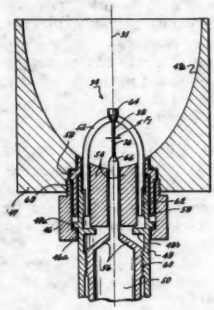
Hans G. Müller, Friedrichshafen, and Othmar Wess, Immenstaad, both of Fed. Rep. of Germany, assignors to Dornier System GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Apr. 27, 1984, Ser. No. 604,859

Claims priority, application Fed. Rep. of Germany, May 7, 1983, 3316837

Int. Cl.⁴ A61B *17/22*

U.S. Cl. 128—328 **7 Claims**



6. In an apparatus for generating shock waves for purposes of contactless destruction and breakup of concrements in a living being comprising:

first means defining a truncated ellipsoidal reflector chamber having a first focal point situated within said chamber, and a second focal point located outside said chamber on account of said truncation;

a spark generator inserted in said chamber in a direction generally along the long and main axis of said ellipsoid in which the focal points are situated, said spark generator including a first conductor means continuing the outer one of a pair of coaxial conductors and having an end surface merging with and coinciding with said ellipsoidal reflector surface, there being arch shaped holding elements which extend from said surface;

said generator further including a first electrode mounted on the apex of said arch shaped holder to position a first electrode in the vicinity of said first focal point and extending generally along said main axis; and

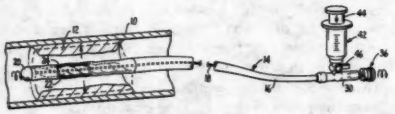
said generator further including a second electrode being the continuation of an inner one of said two coaxial conductors penetrating said shaft end and having an end oriented along and towards said axis for facing said first electrode.

4,608,984

SELF-RETRACTING DILATATION CATHETER

Thomas J. Fogarty, 770 Welch Rd., Palo Alto, Calif. 94304

Continuation of Ser. No. 198,343, Oct. 17, 1980, abandoned.
This application Apr. 9, 1982, Ser. No. 366,932
Int. Cl.[4] A61M *29/02*
U.S. Cl. 128—344 2 Claims



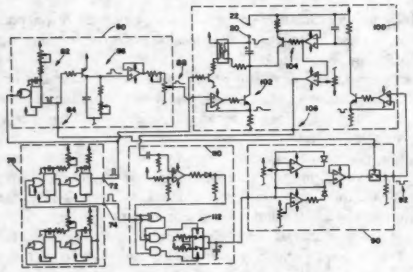
1. A dilatation catheter comprising an elongated flexible tubular body member, a tip member in spaced relation to the distal end of said body member, an inner non-elastic bag secured to the tip member and the distal end of said body member, means to inflate and deflate said bag, an outer elastic bag secured to the tip member and the distal end of said body member operable to inflate in response to inflation of said inner bag and to deflate in response to deflation of said inner bag and to effect compaction of the deflated inner bag, and means operable from the proximal end of said body member when the catheter is in place within an artery to reduce the effective diameters of the bags when they are deflated comprising a wire extending longitudinally and fully through the body member and bags, said wire having its distal end secured to the tip member and having its proximal end secured to a rotatively manipulatable knob-like winding member, said wire being operable by selective rotation of said winding member to rotate the tip member relative to the body member and thereby axially twist and untwist the bags.

4,608,985

ANTIDROMIC PULSE GENERATING WAVE FORM FOR COLLISION BLOCKING

Timothy J. Crish, North Olmsted; James D. Sweeney, and J. Thomas Mortimer, both of Cleveland Heights, all of Ohio, assignors to Case Western Reserve University, Cleveland, Ohio

Filed Oct. 11, 1984, Ser. No. 659,825
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—419 R 17 Claims



1. A method of generating an antidromic action potential traveling unidirectionally along a nerve trunk while maintaining a balanced net charge transfer therealong, the method comprising:

applying an electrical waveform including a first current pulse portion of a first polarity and a second current pulse portion of a second polarity to the nerve trunk, the first current pulse portion including:

a rapid amplitude increasing portion,

a relatively stable amplitude plateau portion, and

a discontinuity free decreasing portion;

the second pulse portion including:

an opposite polarity increasing portion which follows the first pulse portion with a smoothly and transition-free interface therebetween, the opposite polarity pulse portion having a relatively small amplitude as compared to the first pulse portion and a relatively long duration as compared to the first pulse portion;

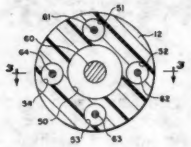
the first pulse portion decreasing portion and the second polarity increasing portion taken together form a smooth, continuous waveform portion whose first derivative is smooth and continuous from the plateau portion through the interface to the opposite pulse relatively small amplitude.

4,608,986

PACING LEAD WITH STRAIGHT WIRE CONDUCTORS

William J. Beranek, Cooper City, and Stanley H. Saulson, Miami, both of Fla., assignors to Cordis Corporation, Miami, Fla.

Filed Oct. 1, 1984, Ser. No. 656,614
Int. Cl.[4] A61N *1/04*
U.S. Cl. 128—786 17 Claims



1. A multielectrode pacing lead which is implantable in a heart for long term pacing of the heart, comprising an elongate continuous, solid core lead body which is made of a pliable insulation material, which has a compact cross-section, which has a proximal end and a distal end, and which is multiluminal, having a central lumen adapted to receive a stylet therein and at least four conductor-receiving lumina therein, in planetary arrangement relative to said central lumen, extending the length thereof, a plurality of distal electrodes or sensors at or adjacent said distal end of said lead body, at least one proximal connector at or adjacent said proximal end of said lead body, and at least four uninsulated, relaxed, uncoiled, generally straight wire conductors which are made of an equiatomic alloy of nickel and titanium which, at the temperature of a human body is substantially more flexible and bendable than wire conductors made of other metals, each uninsulated wire conductor having a diameter less than the diameter of said lumen in which it is received, each conductor being loosely and slidably received in said associated lumen, and being connected at each end, respectively, to one of said distal electrodes or sensors and said proximal connector, and said lead body having a diameter no greater than 0.055 inch.

4,608,987

APPARATUS FOR TRANSMITTING ECG DATA

Henry E. Mills, Dickinson, Tex., assignor to Physioventures, Inc., Houston, Tex.

Filed Dec. 3, 1982, Ser. No. 446,638
Int. Cl.[4] A61B *5/04*
U.S. Cl. 128—639 19 Claims

1. A skin electrode assembly comprising:

a front fabric panel having a plurality of apertures each in a predetermined pattern with respect to said other apertures for placement over the chest of the patient;

a plurality of electrodes each associated with a respective one of said apertures; and

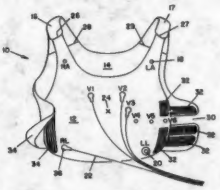
each of said electrodes including

(a) a shaft at least partially within a respective aperture on said front panel and having a shaft axis;

(b) an electrode tip affixed to one end of said shaft for engagement with the skin of the patient;

(c) said shaft movable within said aperture and with respect to said front panel in a direction along said shaft axis;

(d) a stop at the other end of said shaft securing said shaft and electrode tip to said panel;



(e) biasing means adjacent said shaft between said front panel and said electrode tip for biasing said electrode tip into engagement with the skin of the patient;

(f) a ring-shaped member generally encompassing said shaft and having a contact surface for limiting axial movement of said electrode tip to a predetermined extent;

(g) said electrode tip movable outwardly by said biasing means from said fabric panel beyond said contact surface;

(h) an electrode connector electrically connected to said ring-shaped member; and

(i) said ring-shaped member is conductive for transmitting signals from the skin to the electrode connector.

4,608,988

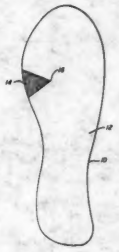
METHOD OF TREATING FUNCTIONAL HALLUX LIMITUS

Howard J. Dananberg, 700 Maple St., Manchester, N.H. 03104

Division of Ser. No. 598,712, Apr. 11, 1984. This application Aug. 30, 1985, Ser. No. 771,255

Int. Cl.[4] A61F *5/14*

U.S. Cl. 128—581 **14 Claims**



1. The process of treating functional Hallux Limitus which comprises fitting the patient with a shoe sole the surface area of which immediately underlying only the first metatarsal head of the patient provides reduced support as compared with the remainder of the surface area of said sole in the region of the ball of the foot of said patient, wherein the surface area of reduced support does not extend forward of said first metatarsal head.

4,608,989

STAND-OFF CELL FOR AN ULTRASONIC SCANNER HEAD

Herbert R. C. Drue, Odense, Denmark, assignor to Medical Innovation Company A/S, Herley, Denmark

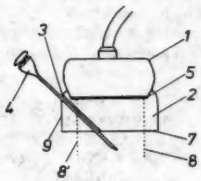
PCT No. PCT/DK84/00011, § 371 Date Sep. 21, 1984, § 102(e) Date Sep. 21, 1984, PCT Pub. No. WO84/03034, PCT Pub. Date Aug. 16, 1984

PCT Filed Feb. 7, 1984, Ser. No. 662,297

Claims priority, application Denmark, Feb. 7, 1983, 511/83

Int. Cl.[4] A61B *10/00*

U.S. Cl. 128—660 **12 Claims**



1. A standoff cell for an ultrasonic scanner head having an area of supervision, the standoff cell comprising:

clutch facing means for contacting an ultrasonic scanner head;

contact surface means for contacting a patient's body; and

an additional surface; and further comprising:

slit means extending between the contract surface and the additional surface for passage therethrough of a needle, such that the point at which the needle penetrates the patient's body is within the area of supervision of the scanner head.

4,608,990

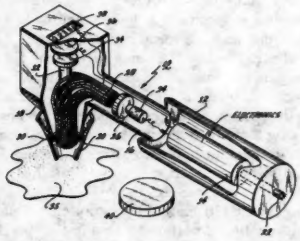
MEASURING SKIN PERFUSION

Virgil B. Elings, P.O. Box 6463, Santa Barbara, Calif. 93111

Filed Sep. 12, 1983, Ser. No. 531,270

Int. Cl.[4] A61B *5/02*

U.S. Cl. 128—633 **2 Claims**



1. A method of measuring local blood flow in skin tissue using fluorescent dye dilution, including the following steps:

injecting a fluorescent dye solution into the blood stream,

producing light energy from a light source including light energy at first particular frequencies and with the light sources having a wattage rating of no more than twenty (20) watts,

pulsing the light energy, filtering the pulsing light energy from the light source to pass substantially only the light energy at the first particular frequencies,

directing the filtered pulsing light energy to a portion of the skin tissue containing fluorescent material,

collecting light energy including fluorescent light energy at

second particular frequencies produced at the portion of the local area and directing the collected light energy away from the skin tissue,

filtering the collected light energy to pass substantially only the collected light energy at the second particular frequencies,

producing a first signal in accordance with the filtered collected light energy,

producing a second signal in accordance with the first signal and representative of the filtered collected light energy in phase with the filtered pulsing light energy which second signal is representative of the fluorescent light energy at the second particular frequencies produced at the portion of the skin tissue, and

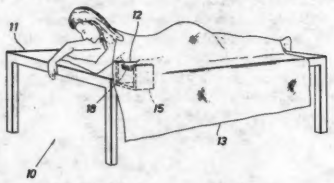
using the magnitude of the second signal as a measure of the relative blood perfusion in the skin tissue.

4,608,991

METHOD FOR IN-VIVO NMR MEASUREMENTS IN THE HUMAN BREAST TO SCREEN FOR SMALL BREAST CANCER IN AN OTHERWISE HEALTHY BREAST

William L. Rollwitz, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Sep. 26, 1984, Ser. No. 654,956
Int. Cl.[4] A61B *5/05*
U.S. Cl. 128—653 **15 Claims**



1. A method of conducting a noninvasive female breast cancer test comprising the steps of:

(a) forming a an inhomogeneous magnetic field between the poles of a magnet wherein the magnetic field defines a specific volume between the poles wherein the specific volume has a specified magnetic field intensity H_o for NMR testing and the specific volume extends outwardly to an edge defined by the outer edge of the female breast;

(b) moving incrementally the specific volume from a beginning point toward an ending point to scan a breast between the pole pieces of the magnet and thereby move the specific volume through the breast the movement being with N examinations located along the breast at different locations wherein each specific volume has the defined thickness and outward extent;

(c) periodically interrogating by a transmitted pulse from a coil into the breast portion located in the specific volume for NMR response wherein the NMR response is dependent on hydrogen in the water, and the water has two states, one state in cancer cells and the other state in healthy tissue, and the cancer cells provide a different NMR response compared with water in the healthy tissue, the step of interrogating including first and second NMR interrogations of specific breast volumes forming NMR responses;

(d) wherein the magnetic field intensity in the specific volume and the pulse from the coil cause an NMR response from water in the body tissue making up the breast portion; and

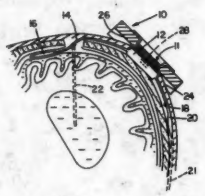
(e) determining cancer cell anomalies arising from cancer cells in the breast as indicated by comparison of the NMR water responses to form difference signals.

4,608,992

EXTERNAL MAGNETIC DETECTION OF PHYSIOPATHOLOGICAL AND OTHER PARAMETERS

Salomon Hakim, Carrera 13, N. 48-26, Bogota, Colombia, and Carlos A. Hakim, 3400 Galt Ocean Dr., Apt. 1702 South, Fort Lauderdale, Fla. 33308

Filed Aug. 18, 1983, Ser. No. 524,367
Int. Cl.[4] A61B *5/05*
U.S. Cl. 128—654 **61 Claims**



1. The method of transmitting from within the body information regarding an internal parameter, comprising the steps of

surgically implanting a device containing means for generating a magnetic field having a spatial orientation with respect to said device that is influenced by changes in said parameter, and

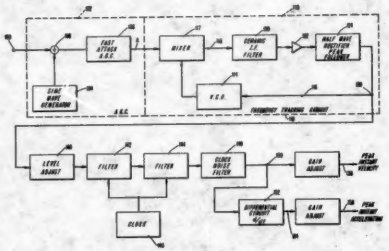
using an external detection element to detect the spatial orientation of said field with respect to said device, to thereby detect said changes in said parameter.

4,608,993

BLOOD FLOW MEASUREMENT DEVICE AND METHOD

David E. Albert, McAlester, Okla., assignor to Quinton Instrument Company, Seattle, Wash.

Filed Jul. 31, 1984, Ser. No. 636,383
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—663 **27 Claims**



1. An apparatus for measuring instantaneous peak velocity in blood flow through a blood vessel, comprising

means for obtaining a Doppler signal having a frequency spectrum determined by Doppler shifting of an ultrasonic signal caused by relative movement of components of the blood in the blood vessel; and

means for tracking a high frequency edge of said frequency spectrum to produce a signal representative in value to the instantaneous peak velocity of the blood components, said tracking means including means for modulating said Doppler signal up to a frequency above 100 kHz.

4,608,994

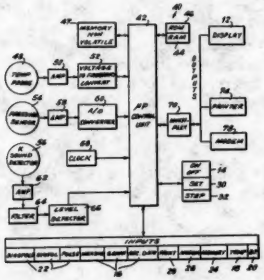
PHYSIOLOGICAL MONITORING SYSTEM

Lyuji Ozawa, Glencoe; Hans Schmidt, Wood Dale; Mike Hsu, Franklin Park, and Arye Perlmutter, Skokie, all of Ill., assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 20, 1984, Ser. No. 683,856

Int. Cl.[4] A61B 5/00

U.S. Cl. 128—670 **1 Claim**



1. A physiological monitoring device for monitoring a user's physiological condition, comprising sensors adapted to generate first, second and third measurement signals, said first and second measurement signals representative of the user's diastolic and systolic blood pressure and pulse rate, and said third measurement signals representative of the user's body temperature, first, second and third means for converting said respective first, second and third measurement signals into first, second and third processing signals, a microprocessor, a nonvolatile memory coupled to said microprocessor, said microprocessor in communication with said first, second and third converting means so as to receive said first, second and third processing signals, first switch means operable to cause said microprocessor to store selected ones of said processing signals in said memory, said memory capable of storing a plurality of said processing signals over a selected period of time, a multiplex in communication with and controlled by said microprocessor, said multiplex adapted to receive output signals from said microprocessor and memory and direct said output signals to any one of a plurality of information output means, said output signals representing information of the user's diastolic and systolic blood pressure, pulse rate and body temperature over a selected time period, said information output means including a screen on which said information is displayed, a printer for printing said information, and means for transmitting said information over a communication link for reproduction at a given location, and second switch means operable to cause said microprocessor to control said multiplex to direct said output signals to one of said information output means, whereby an indication of the user's diastolic and systolic blood pressure, pulse rate and body temperature over a selected period of time is provided.

4,608,995

METHOD AND APPARATUS FOR THE NON-INVASIVE DETERMINATION OF THE MINUTE VOLUME OF THE HEART

Dag Linnarsson, Stocksund, and Hans Larsson, Stockholm, both of Sweden, assignors to Karolinska Institutet Institutionen för Medicinsk Teknik, Stockholm, Sweden

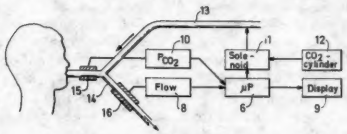
Filed Aug. 14, 1984, Ser. No. 640,662

Claims priority, application Sweden, Jan. 19, 1983, 8300246

Int. Cl.[4] A61B 5/02

U.S. Cl. 128—713 **8 Claims**

1. A method for the non-invasive determination of the minute volume $\dot{Q}$ of the heart of a subject, which method comprises the steps of (a) estimating the amount in which a sufficiently soluble gas is present in the blood of the subject, prior to and subsequent to the passage of the blood through the heart; (b) separating expired gas from inspired gas with each respiration cycle and measuring directly in the flow of respiration gas the magnitude of said respiration gas flow and the amount of said soluble gas contained therein; and (c) using the determined values of said flow magnitude and said soluble-gas content to control metering of said soluble gas to the flow of inspiration gas from a source of such gas during the next following cycle, wherein the metering of said soluble gas is controlled in a manner to change the lung content of said gas in accordance with a given program; the value $\dot{Q}$ for pairs of respiration cycles is determined as the ratio between the difference between (i) effective gas-flow/unit time $\dot{V}_1$ for each respiration cycle and $\dot{V}_2$ for the next respiration cycle and (ii) the difference between the gas-content in arterial blood Ca_1 for each respiration cycle and Ca_2 for the next respiration cycle; $\dot{Q}$ for a plurality of pairs of respiration cycles is determined, each pair of said cycles being spaced by a given number of respiration cycles; and the mean value of $\dot{Q}$ is calculated from the various values $\dot{Q}$ determined.



4,608,996

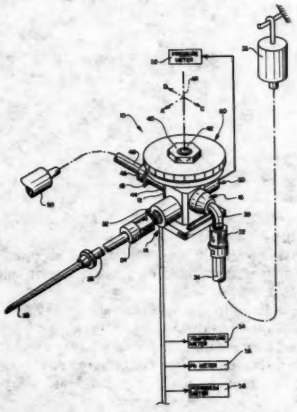
EXTERNAL BLOOD PARAMETER DIAGNOSTIC SYSTEM

David C. Brown, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Aug. 10, 1984, Ser. No. 639,574

Int. Cl.[4] A61B 5/02

U.S. Cl. 128—760 **17 Claims**



1. Apparatus for use in externally monitoring parameters of blood and for obtaining blood samples from a single communication access to a patient's blood vessel, comprising:

a housing having a sample port for fluid communication with blood sampling means, a patient port for fluid communication with a patient's blood vessel by way of said single communication access, a parenteral port for fluid communication with a pressurized source of parenteral fluid and a flow through pressure chamber having first

and second inlet-outlet passageways permitting fluid flow through said chamber and having a pressure sensor therein positioned relative to said passageways to be responsive to the pressure of fluid flowing through said chamber;

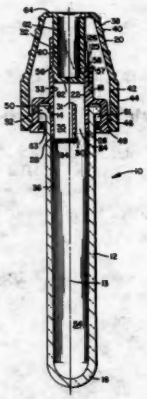
flow control means for selectively controlling the fluid flow between said ports and said pressure chamber, said control means having a first condition completing a fluid flow path from said parenteral port through said pressure chamber to said patient port while blocking said sample port so that the parenteral fluid will be in fluid communication with the patient's blood for monitoring blood pressure transmitted by said parenteral fluid and maintaining patency of said access, a second condition completing a fluid flow path from said parenteral port through said pressure chamber to said sample port while blocking said patient port for flushing the flow path and minimizing production of air bubbles, and a third condition completing a fluid flow path from said patient port to said sample port while blocking said parenteral port for sampling blood.

4,608,997

BLOOD COLLECTION ASSEMBLY

Hugh T. Conway, Verona, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jan. 25, 1985, Ser. No. 695,120
Int. Cl.[4] A61B 5/00
U.S. Cl. 128—763 **16 Claims**



1. A blood collection assembly characterized by

(a) a tube-shaped container;

(b) said container having a closed end and an open end;

(c) a blood collector mounted on said open end; said collector including

(1) a substantially tubular collector body having a tubular flow passage therethrough;

(2) said body extending from a puncture wound engaging front end surface to a blood discharge rear end surface;

(3) means on said body for attaching said body to said open end of said container;

(4) vent means in said body for air displacement therethrough;

(5) said front end surface having a large circumferential extent;

(d) a lancet positioned in said collector with the cutting edge thereof positioned adjacent said front end surface of said collector;

(e) a removable cap connected to said container for mounting on said blood collector for closing the front end thereof and covering said lancet;

(f) two-position cooperating locking means on said blood collector and said cap for removably holding said cap on said collector in a first position and for permanently locking said cap on said collector and lancet in a second position and

(g) said two-position cooperating locking means including

(1) a first annular abutment on said blood collector body, said first annular abutment extending outwardly from said body;

(2) a second annular abutment on said cap, said second annular abutment extending inwardly from said cap; and

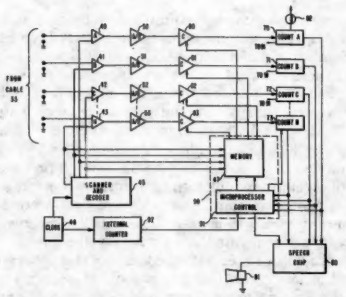
(3) a tapered surface on said second annular abutment for camming said second abutment over said first abutment into said permanent locking second position of said cap on said collector.

4,608,998

KNEE ALIGNMENT MONITORING APPARATUS

Wilbert Murdock, New York, N.Y., assignor to COM Sports, Inc., New York, N.Y.

Filed Dec. 15, 1983, Ser. No. 561,681
Int. Cl.[4] A61B 5/10
U.S. Cl. 128—782 **18 Claims**



1. Apparatus for monitoring the proper alignment of a knee of a user, comprising:

transducer means adapted to be coupled to the knee of said user and operative to provide an output signal indicative of the relative forces on the knee joint during an exercise, said transducer means including a first transducer section responsive mainly to forces exerted about the femur section of the knee, and a second transducer section responsive mainly to forces exerted about the tibia section of the knee, to provide said output signal proportional to the displacement of the tibia with respect to the femur,

memory means for storing data indicative of predetermined force levels for said knee during said exercise,

comparison means operative to compare data stored in the memory means with said output signal and for providing an indication signal when said output signal exceeds said stored force level data,

means coupled to the comparison means for counting the indication signals provided by said comparison means, and

means for issuing a warning signal when said counting means reaches a predetermined count.

15. A method of monitoring proper alignment of the knee joint of a user while engaged in exercise comprising the steps of:

storing in a memory data indicative of a predetermined force level for a knee,

detecting the level of force acting to displace the tibia and femur of the user during an exercise,

comparing said detected level of force with said stored level of force,

counting the number of times the detected level deviates from said stored level by a predetermined amount, and warning the user when the number counted exceeds a predetermined amount.

4,608,999

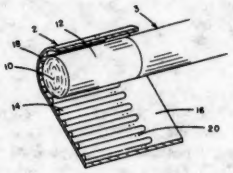
CIGARETTE FILTER

Robert R. Johnson, Jefferson, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Continuation of Ser. No. 349,391, Feb. 16, 1982, abandoned, which is a division of Ser. No. 211,491, Dec. 1, 1980, Pat. No. 4,362,172. This application Jan. 31, 1984, Ser. No. 654,421

Int. Cl.[4] A24D *3/04*

U.S. Cl. 131—336 **13 Claims**



1. A filter for a cigarette comprising:

a porous filter rod of cylindrical configuration;

a smoke impervious wrapper extending longitudinally along said rod from one end thereof and circumscribing said rod leaving flow-through opposed ends of said rod;

tipping material extending longitudinally of and circumscribing said wrapper, said tipping material being provided with means permitting ventilating air flow therethrough; and,

spacing means disposed between said wrapper and said tipping material, said spacing means being non-unitary with said wrapper and said tipping material and extending a preselected distance therealong defining ventilating air channels between said wrapper and said tipping material, ventilating air being the only fluid flowing through said channels when the filter is used in combination with a cigarette tobacco column during smoke draw.

4,609,000

AUTOMATIC SET-UP SYSTEM

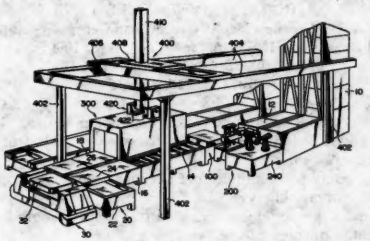
Akihiko Noh, Chigasaki; Yoshiaki Saijo, Yokohama; Shinichi Sato, Kawasaki, and Ichiro Tanaka, Sagamihara, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 581,417, Feb. 17, 1984, Pat. No. 4,543,970. This application Jun. 14, 1985, Ser. No. 744,613

Claims priority, application Japan, Feb. 21, 1983, 58-26236; Oct. 18, 1983, 58-195073; Oct. 18, 1983, 58-195076

Int. Cl.[4] B08B *3/04*

U.S. Cl. 134—62 **29 Claims**



1. An automatic set-up system for setting up a work to be processed by a flexible manufacturing system automatic machine tool, comprising:

a pallet on which said work is mounted;

a setting table on which said pallet having said work thereon is placed;

a convey unit having grip means for sequentially gripping and conveying said pallet and the work onto said setting

a clamp mounted on said pallet to clamp and fix the work on said pallet, said clamp including,

a stationary shaft,

a rotating shaft mounted to be coaxial with said stationary shaft which is movable along an axial direction of said stationary axis and rotatable with respect to said stationary axis, said rotating shaft having a male thread portion formed at one end portion of said rotating shaft,

a clamp arm having a distal end and a proximal end and rotatably supported by said rotating shaft at said proximal end thereof,

a regulating member disposed between said stationary shaft and said clamp arm to regulate a rotational angle of said clamp arm within a predetermined range,

a turning mechanism disposed between said clamp arm and said rotating shaft which rotates said clamp arm together with said rotating shaft while said clamp arm is coupled to said rotating shaft within a rotational angle range defined by said regulating member and which allows relative rotation between said clamp arm and said rotating shaft when said clamp arm is prohibited to rotate by said regulating member,

stationary shaft supporting means disposed in said pallet to support said stationary shaft which will not rotate, and a female thread portion of said pallet which is engaged with said male thread portion of said rotating shaft, said clamp arm being rotated by said turning mechanism within the rotational angle range, which is defined by said regulating member when said stationary shaft is supported by said stationary shaft supporting means to rotate said rotating shaft, so that said male thread portion of said rotating shaft is screwed in said female thread portion of said pallet, thereby moving said clamp arm together with said rotating shaft toward said pallet; and

a cleaner for cleaning the work and said pallet which are fixed together by said clamp; and

feeding means for delivering the work and said pallet which are fixed together by said clamp to the automatic machine tool and for feeding a processed work and said pallet to said cleaner.

4,609,001

AUTOMATIC SET-UP SYSTEM

Akihiko Noh, Chigasaki; Yoshiaki Saijo, Yokohama; Shinichi Sato, Kawasaki, and Ichiro Tanaka, Sagamihara, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 581,417, Feb. 17, 1984, Pat. No. 4,543,970. This application Jun. 14, 1985, Ser. No. 744,612

Claims priority, application Japan, Feb. 21, 1983, 58-26236; Oct. 18, 1983, 58-195073; Oct. 18, 1983, 58-195076

Int. Cl.[4] B08B *3/10*

U.S. Cl. 134—62 **6 Claims**

1. An automatic set-up system for setting up a work to be processed by a flexible manufacturing system automatic machine tool, comprising:

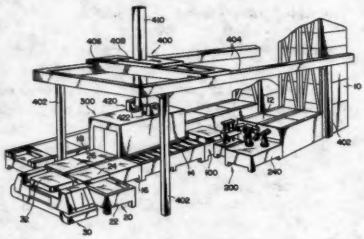
a pallet on which said work is mounted;

a setting table on which said pallet having said work thereon is placed;

a convey unit having grip means for sequentially gripping and conveying said pallet and the work onto said setting table;

a clamp mounted on said pallet to claim and fix the work on said pallet;

a cleaner for cleaning the work and said pallet which are fixed together by said clamp, said cleaner having: holding means for holding an object which consists of the work and said pallet on which the work is clamped by said clamp and for rotating said object along a horizontal rotational axis, spraying means for spraying a cleaning



liquid toward the object, and vibrating means for intermittently vibrating the object while the object is rotated; and

feeding means for delivering the work and said pallet which are fixed together by said clamp to the automatic machine tool and for feeding a processed work and said pallet to said cleaner.

4,609,002

AUTOMATIC SET-UP SYSTEM

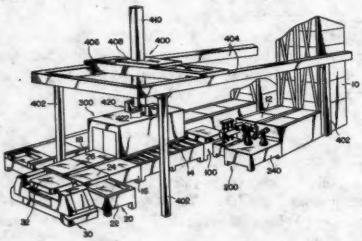
Akihiko Noh, Chigasaki; Yoshiaki Saijo, Yokohama; Shinichi Sato, Kawasaki, and Ichiro Tanaka, Sagamihara, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 581,417, Feb. 17, 1984, Pat. No. 4,543,970. This application Jun. 14, 1985, Ser. No. 744,700

Claims priority, application Japan, Feb. 21, 1983, 58-26236; Oct. 18, 1983, 58-195073; Oct. 18, 1983, 58-195076

Int. Cl.[4] B08B *3/04*

U.S. Cl. 134—62 **3 Claims**



1. An automatic set-up system for setting up a work to be processed by a flexible manufacturing system automatic machine tool, comprising:

a pallet on which said work is mounted;

a setting table on which said pallet having said work thereon is placed;

a convey unit having grip means for sequentially gripping and conveying said pallet and the work onto said setting table, said convey unit being provided with grip means at a lower end thereof, having a lift member which is vertically movable, and said grip means includes,

a support plate fixed at a lower end of said lift member such that a lower surface of said support plate is substantially horizontal,

a pair of arms whose longitudinal direction is substantially perpendicular to said support plate and which are spaced apart from each other such that said arms can come closer to each other, and

driving means for moving said arms, each of said arms being provided with: a plurality of clamp rods extending in an opposing direction of said arms, pistons fixed at proximal ends of said press rods, cylinders slidably inserting said pistons, and a press hydraulic path for supplying pressurized oil to said cylinders to move said pistons and said clamp rods, whereby the work is clamped between said clamp rods of said pair of arms when the pressurized oil is supplied to said cylinders;

a clamp mounted on said pallet to clamp and fix the work on said pallet;

a cleaner for cleaning the work and said pallet which are fixed together by said clamp; and

feeding means for delivering the work and said pallet which are fixed together by said clamp to the automatic machine tool and for feeding a processed work and said pallet to said cleaner.

4,609,003

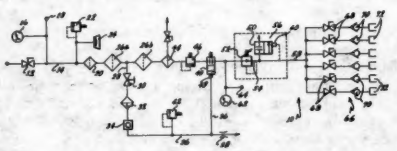
METHOD AND APPARATUS FOR GENERATION OF A PNEUMATIC FEEDBACK TRIGGER SIGNAL

Dink Neugen, Houston, Tex.; Stephen M. Bull, Westminster, and Gabriel D. Ferramola, Arcadia, both of Calif., assignors to Zwick Energy Research Organization, Inc., Huntington Beach, Calif.

Filed Jan. 3, 1985, Ser. No. 688,687

Int. Cl.[4] F17D *1/02*

U.S. Cl. 137—2 **5 Claims**



1. A method for generating a pneumatic feedback trigger signal in a gas deliver system comprising the steps of:

sampling a portion of gas from said gas delivery system;

determining the amount of a contaminant within said sampled gas;

reducing a backpressure in the event that the amount of said contaminants exceeds a predetermined magnitude; and

pneumatically actuating a valve in response to said backpressure, said valve included within said gas delivery system, actuation of the said valve effectuating an appropriate response to the existence of said contaminant in said gas,

whereby an entirely pneumatic system is provided for responding to the existence of said contaminant in said gas.

4,609,004

AIRCRAFT SAFETY FUEL TANK

Archibald L. Greene; Gary L. Greene, and George Spector, all of 233 Broadway, RM 3615, New York, N.Y. 10007

Filed Jul. 30, 1984, Ser. No. 636,131

Int. Cl.[4] F16K *17/36*

U.S. Cl. 137—38 **2 Claims**

1. An aircraft safety fuel tank which comprises:

(a) a housing having a top wall inlet opening and a front wall outlet opening;

(b) a safety seal fuel filler neck secured to the inlet opening of said housing;

(c) a quick coupling engine fuel line holder secured to the outlet opening of said housing;

(d) a protective covering wrapped around said housing; and

(e) at least one strap for supporting said tank to the aircraft, wherein said safety seal fuel filler neck comprises:

(f) a sleeve threadably secured to the inlet opening of said housing, said sleeve having a passage, a seat within the passage and an internally threaded wall within the passage above the seat; and

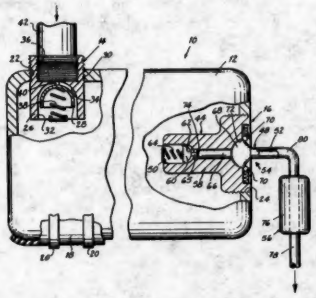
(g) a spring biased stopper having a bar projecting from its top, said stopper normally biased up against the seat within the passage of said sleeve sealing the passage thus preventing leakage of fuel when said tank is in an inverted position, when a fuel hose engages the threaded internal wall of the passage of said sleeve it will press down the bar of said stopper opening the passage, thus allowing fuel to enter said housing from the fuel hose, wherein said protective covering comprises multi layers of steel cord and rubber material forming a puncture proof coating around said housing, wherein said quick coupling engine fuel line holder comprises:

(h) a female member having a sealable fluid passage therethrough, said female member threadably secured to the outlet opening of said housing;

(i) a male member having a fluid passage therethrough, said male member mates with said female member;

(j) means for holding said male member within said female member for opening the fluid passage of said female member thus allowing fuel to travel to engine; and

(k) means for releasing said male member from said female member for closing the fluid passage of said female member thus preventing leakage of fuel on impact of the aircraft, wherein said female member comprises:



(l) a sleeve threadably secured to the outlet opening of said housing, said sleeve having a passage and a seat within the passage; and

(m) a spring biased stopper having a bar projecting from its top, said stopper normally biased toward the seat within the passage of said sleeve wherein said male member is a hollow tube wherein said means for holding said male member within said female member for opening the fluid passage of said female member thus allowing fuel to travel to engine comprises:

(n) a cam affixed to said hollow tube; and

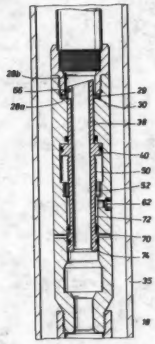
(o) a spring biased ball mounted transversely within a wide passage portion of said sleeve of said female member, said ball engages and holds said cam in position when said hollow tube is inserted within the passage of said sleeve of said female member so that end of said hollow tube will press back the bar of said stopper of said female member, opening the passage thus allowing the fuel to travel to the engine, wherein said means for releasing said male member from said female member for closing the fluid passage of said female member thus preventing leakage of fuel on impact of the aircraft comprises a weight affixed to an outwardly extending portion bent at ninety degrees, of said hollow tube of said male member.

4,609,005

TUBING ISOLATION DISC VALVE

James M. Upchurch, Sugar Land, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Jul. 19, 1985, Ser. No. 756,891
Int. Cl.[4] F16K *17/14*
U.S. Cl. 137—68.1 **4 Claims**



1. A full-bore well tool adapted to be tandemly coupled in a pipe string suspended in a well bore, comprising:

a tubular housing having an axial bore with a portion thereof defining an enlarged chamber;

closure means in said housing including a rupturable disc of a ductile material having a central portion extended transversely across said enlarged chamber, and means sealingly securing the peripheral portion of said disc to said housing for closing said housing bore so long as said disc is intact;

means adapted for severing a major part of said central disc portion from said peripheral disc portion and displacing said major part outwardly against one wall of said enlarged chamber, including a tubular mandrel having an unobstructed axial bore movably arranged within said housing bore and including a skewed forward end defining a slanted annular cutting edge having a forwardly-opening longitudinal notch in one segment thereof;

actuating means including piston means on said mandrel operable in response to fluid pressure exterior of said housing to advance said mandrel from an initial position where its said forward end is adjacent to said disc to a final position where its said forward end has passed through said disc for progressively severing those parts of said central disc portion successively contacted by said annular cutting edge from said peripheral disc portion and progressively bending that part of said central disc portion disposed within said notch outwardly to confine said central disc portion between said chamber wall and the exterior of said mandrel; and

retaining means cooperatively arranged on said mandrel and said housing and operable upon advancement of said mandrel to its said final position for securing said mandrel in its said final position to block said central disc portion from subsequently moving inwardly across said unobstructed axial bore of said mandrel.

4,609,006

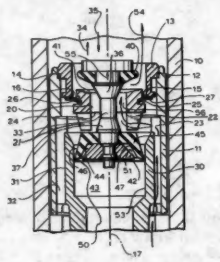
DIVERTER

Richard G. Parkison, Louisville, Ky., and George E. Phillips, Oshkosh, Wis., assignors to American Standard Inc., New York, N.Y.

Filed Nov. 29, 1984, Ser. No. 676,042
Int. Cl.[4] F16K *11/02*
U.S. Cl. 137—119 **1 Claim**

1. A diverter for selectively directing water flow to an hand

spray nozzle and to a faucet spout and to block backflow from the nozzle to the water supply in conditions of negative supply pressure comprising, an hollow spray nozzle fitting in fluid communication with the hand spray nozzle, an elastic cup seal within said spray hose fitting for responding to relative pressure fluctuations between said fitting and the water supply to selectively interrupt fluid communication therebetween in order to establish flow from the faucet, a flexible seal for selectively establishing air flow from the faucet to the water supply in a condition of low supply pressure relative to said pressure within said spray hose fitting and in which said elastic cup seal also interrupts the flow between said fitting and the water supply, a stem seal for selectively directing water flow to the faucet spout as said cup seal engages said adjacent spray hose fitting portion when the spray nozzle is not being used, an hollow diverter housing, said housing having a beveled surface



thereon for receiving said stem seal to selectively interrupt water flow to the faucet spout, said diverter housing having a plurality of air passageways formed therein and a slot formed in the surface thereof to receive said flexible seal to enable said seal to selectively block said air passageways, a diverter stem for supporting said cup seal and said stem seal thereon and to enable said seals to divert water flow through the diverter in response to relative pressures applied to the diverter, said cup seal having a compound inner conical surface, and a seal retainer on said diverter stem with said cup seal, said seal retainer being spaced from said compound conical surface to establish an annular void space therebetween to provide said elastic cup seal response to increasing water supply pressure to provide an increasing restriction between the cup seal and the adjacent portion of the spray hose fitting with increasing supply pressure so as to tend to maintain fairly constant flow from the spray nozzle.

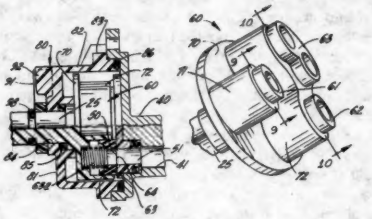
4,609,007

MIXING VALVE FOR CONNECTION TO HOT AND COLD WATER SUPPLY LINES FOR FEEDING A VARIABLY PROPORTIONED MIXTURE OF HOT AND COLD WATER TO A SHOWER HEAD OR THE LIKE

John B. Uhl, Morgantown, W. Va., assignor to Sterling Faucet Company, Morgantown, W. Va.

Filed Oct. 27, 1983, Ser. No. 546,202
Int. Cl.[4] F16K *11/06*
U.S. Cl. 137—270 **12 Claims**

1. A mixing valve for connection to hot and cold water supply lines for feeding a variably proportioned mixture of hot and cold water to a shower head or the like comprising, in combination, a valve body presenting a planar discharge surface having spaced hot and cold inlet orifices with an outlet orifice generally centered on an axis between the inlet orifices, a rotor on the axis and arranged opposite the discharge surface, the rotor having a plurality of arcuately spaced pedestals projecting axially in the direction of said discharge surface, a plurality of axially projecting sealing pads of resilient material mounted on said pedestals and terminating in a plane perpendicular to the axis and engaging the discharge surface at a radius from the axis corresponding to the radius of the inlet orifices, stops for limiting the range of rotor rotation from beginning to end positions to more than 90° but less than 180°, the plurality of pedestals being so angularly positioned on the rotor that during the course of rotor rotation from the beginning position (a) both inlet orifices are covered, (b) the cold orifice is progressively uncovered while the hot orifice remains covered, (c) the hot orifice is progressively uncovered while the cold orifice remains uncovered and (d) the cold orifice is progressively covered while the hot orifice remains uncovered



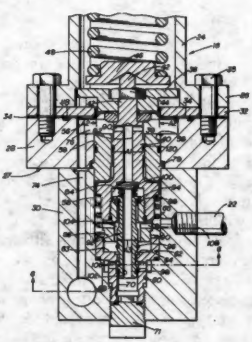
thereby providing independent variation of hot and cold water to produce a gradual transformation from cold to hot as the rotor is turned, said hot and cold water supply lines being normally positioned on the left and right sides, respectively, of said axis, the rotor, upon disassembly of the valve, being 180°-rotatable about the axis relative to the stops, for providing, upon reassembly of the valve, above-identified features (a) through (d) when the hot and cold water supply line positions are reversed.

4,609,008

NON-FLOWING PRESSURE RESPONSIVE PILOT VALVE

William L. Anderson, Jr., Houston; Michael D. McNeely, Katy, both of Tex.; Irvin B. Weise, deceased, late of Bellaire, Tex., and by Stanley A. Weise, executor, Dallas, Tex., assignors to Anderson-Greenwood USA, Inc., Bellaire, Tex.

Filed Sep. 11, 1985, Ser. No. 774,809
Int. Cl.[4] G05D *16/00*
U.S. Cl. 137—488 **23 Claims**



1. A pilot valve for a control valve in a main flow line comprising:

a valve body having a first fluid chamber, a second fluid chamber, and an intermediate fluid chamber between said first and second fluid chambers;

said first fluid chamber being in fluid communication with fluid to be controlled in the main flow line on one side of the control valve and having a fluid pressure responsive means therein, said fluid pressure responsive means in-

cluding a slidable body extending within said intermediate fluid chamber having a central opening therein in fluid communication with said first fluid chamber, and a first valve seat on said slidable body about said central opening positioned between said first fluid chamber and said intermediate fluid chamber;

a second valve seat fixed within said valve body positioned between said second fluid pressure chamber and said intermediate fluid chamber;

a separate floating spool valve received within said central opening adjacent said first valve seat and having cooperating seals thereon for sealing against said first and second valve seats;

said second valve chamber being in fluid communication with main flow line on the other side of the control valve and said intermediate fluid chamber being in fluid communication with a fluid pressure responsive element in said control valve;

said spool valve being seated on both said first and second seats in normal operation to block fluid flow between said first, second, and intermediate fluid chambers;

said fluid pressure responsive means and slidable body moving in response to a predetermined increase in fluid pressure in said first fluid chamber to unseat said spool valve at said second seat to permit fluid communication between said intermediate fluid chamber and said second fluid chamber while maintaining seated position at said first valve seat to block fluid flow between said inlet fluid chamber and said intermediate fluid chamber;

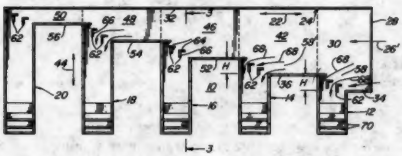
said fluid pressure responsive means and said slidable body movable in response to a predetermined decrease in fluid pressure in said first fluid chamber to unseat said spool valve at said first seat to permit fluid communication between said inlet chamber and said intermediate chamber while maintaining seated position at said second valve seat to block fluid flow between said second fluid chamber and said intermediate fluid chamber.

4,609,009

STEPPED PLENUM SYSTEM

Robert W. Tisone, Sykesville, Md., assignor to Environmental Elements Corp., Baltimore, Md.

Filed Dec. 11, 1985, Ser. No. 807,760
Int. Cl.[4] B01D *45/00*
U.S. Cl. 137—561 A **20 Claims**



1. A stepped plenum system for substantially equalizing flow rate of a fluid through a plurality of longitudinally displaced outlet conduits, comprising:

(a) an inlet conduit extending in said longitudinal direction having a substantially constant inlet cross-sectional flow area defining a first flow region;

(b) at least a first outlet conduit in fluid communication with said inlet conduit; and,

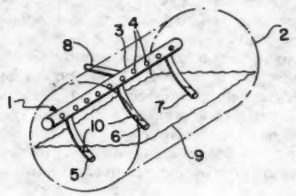
(c) at least a second outlet conduit in fluid communication with said inlet conduit, said second outlet conduit being longitudinally displaced from said first outlet conduit and defining a second flow region therebetween, said second flow region having a substantially constant cross-sectional flow area in said longitudinal direction and less than said inlet cross-sectional flow area.

4,609,010

FLUID INLET DISTRIBUTOR

Frederick D. Watson, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Sep. 15, 1980, Ser. No. 187,279
Int. Cl.[4] F16K *24/00*
U.S. Cl. 137—587 **14 Claims**



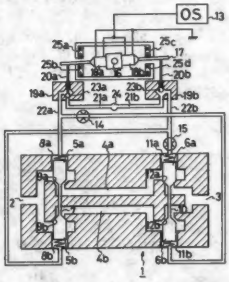
1. A fluid inlet distributor for a fluid treating vessel adapted to contain a body of oil and a body of a liquid of different gravity from said oil and immiscible therewith, said distributor comprising a chamber provided with at least one row of orifices disposed horizontally along a longitudinal side of said chamber, fluid inlet means to said chamber, and at least one conduit joined to said chamber in fluid communication therewith and extending downwardly from said chamber; said conduits being open at their bottom ends and said chamber being otherwise closed.

4,609,011

FLOW CONTROL VALVE

Tadayoshi Uehara, Sagamihara, Japan, assignor to Aida Engineering, Ltd., Kanagawa, Japan

Filed May 2, 1985, Ser. No. 729,629
Claims priority, application Japan, Jun. 14, 1984, 59-122588
Int. Cl.[4] F16K *21/00*
U.S. Cl. 137—624.15 **7 Claims**



1. A flow control valve comprising:

a valve body;

an inlet port in said valve body;

an outlet port in said valve body;

two parallel fluid flow passages each extending between and communicating at each end with said inlet and outlet ports;

a first valve opening adjacent the end of each passage near said inlet port;

a second valve opening adjacent the end of each passage near said outlet port;

a valve seat in each of said valve openings;

a first pressure chamber in said valve body adjacent each first valve opening;

a second pressure chamber in said valve body adjacent each second valve opening;

first and second poppets slidably mounted in said first and second presure chambers, respectively, for engagement and disengagement with the valve seats of said first and second openings for closing and opening said openings, respectively;

said first poppets being simultaneously movable so that movement of one of said first poppets into closing engagement with the respective valve seat moves the other of said first poppets into a disengaged position with the respective valve seat;

said second poppets being simultaneously movable so that movement of one of said second poppets into closing engagement with the respective valve seat moves the other of said second poppets into a disengaged position with the respective valve seat;

means to apply fluid pressure from a fluid pressure source to said pressure chambers to selectively actuate said poppets therein;

means to produce a pulse signal of variable frequency; and

fluid pressure control means operatively associated with said pulse signal means to control the fluid pressure applied to said first pressure chambers selectively in accordance with a timing synchronized with said pulse signal and to said second pressure chambers selectively after a predetermined time delay for opening and closing said valve openings to allow intermittent flow through said passages for predetermined time periods controlled by said means to produce a pulse signal.

4,609,012

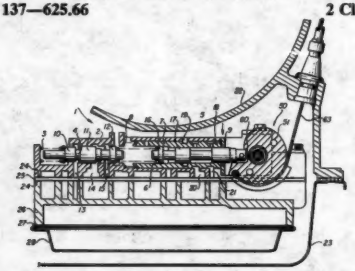
SERVO VALVE

John J. Shelton, Tuttle, Okla., assignor to Robert L. Fife, Fort Worth, Tex.

Continuation-in-part of Ser. No. 428,668, Sep. 30, 1982, abandoned. This application Oct. 17, 1984, Ser. No. 661,914

Int. Cl.[4] F16K *11/065, 31/126*

U.S. Cl. 137—625.66 **2 Claims**



1. A servo valve for controlling output pneumatic power to actuator means, said valve comprising

(a) a housing having an inner area defined by end walls, side walls, a top wall, and a bottom wall having a flat inner surface,

(b) an inlet port opening through said flat inner surface,

(c) outlet ports also opening through said surface,

(d) pressure inlet means leading to said inlet port, said outlet ports being arranged to be connected to actuator means,

(e) a control member in said housing having end walls secured removably thereto and also having a pair of recesses facing said inner surface in association with said inlet and outlet ports,

(f) a pair of leaf springs secured in spaced relation from each other between said control member and its end walls and being secured to said top wall of said housing for suspending said control member in close but freely movable spaced relation from said flat inner surface,

(g) a diaphragm mounted in one of said end walls of said housing controlled in its movement by a pneumatic correction low signal force from a sensor,

(h) an extension on one of said end walls of said control member connected to said diaphragm,

(i) said diaphragm operatively moving said control member laterally relative to said leaf springs under the influence of a pneumatic correction signal force from a sensor to selectively position said control member relative to said inlet and outlet ports for controlling power to actuator means,

(j) said leaf springs being of uniform thickness and of known characteristics whereby to preselect their ability of lateral deflection capable of allowing movement of said control member by a low force from said movable pressure responsive drive means but having a compressive strength without buckling as a result of the compression of the force at said pressure inlet means against said control member.

4,609,013

PRESSURE MODULATOR VALVE DEVICE

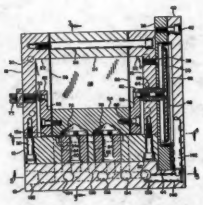
Shigeo Takahashi, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Mar. 6, 1985, Ser. No. 708,948

Claims priority, application Japan, Mar. 30, 1984, 59-061003

Int. Cl.[4] B60K *17/00, 41/00*

U.S. Cl. 137—637 **4 Claims**



1. A pressure modulator valve device disposed in an oil pressure circuit of an automatic transmission, comprising:

first and second modulator valve means each having a valve body and a plunger slidably fitted within each valve body, said first and second modulator valve means being positioned so as to be adjacent each other;

first and second cam means for engaging each said plunger;

a connecting member for interconnecting each of said first and second cam means;

an input member connected to at least said first cam means; and

a single supporting member for supporting opposite ends of said connecting member, wherein each of said first and second modulator valve means further comprises a sleeve within which said plunger is disposed and wherein said single supporting member interconnects said sleeve of each of said first and second modulator valve means so as to maintain said sleeve within each valve body, respectively.

4,609,014

VARIABLE RATE FLOW CONTROLLER

Richard A. Jurjevic, Springfield, and William J. Schmidt, New Lebanon, both of Ohio, assignors to Vernay Laboratories, Inc., Yellow Springs, Ohio

Filed Oct. 25, 1985, Ser. No. 791,628
Int. Cl.[4] G05D 7/01
U.S. Cl. 138—45 9 Claims

1. In a variable rate flow control valve including a resilient flow control washer having a flow opening therethrough and capable of maintaining a substantially constant flow rate therethrough by deformation in response to varying pressure imposed on said washer, the improvement comprising:

means defining a longitudinally extending flow control passage through said valve,

a radially inwardly projecting flange defining a substantially planar valve seat in said passage,

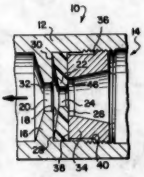
means defining a flow opening through said flange,

said valve seat lying in a plane substantially normal to said longitudinally extending flow control passage,

said flow control washer having a downstream face thereof seated on said valve seat,

said flow opening through said flow control washer being substantially concentric with and of a smaller diameter than said flow opening through said seat,

adjusting means received within said passage upstream of said flow control washer,



said adjusting means having a compression face disposed substantially normally to said longitudinally extending flow control passage and in opposition to said valve seat,

means defining through said adjusting means a flow opening concentric with and of greater diameter than said flow openings through said valve seat and said flow control washer,

said compression face being adapted to engage an upstream face of said flow control washer, and

means for selectively positioning said adjusting means with respect to said flange with said compression face and valve seat in engagement with said upsteam and downstream faces, respectively, of said flow control washer to vary the constant rate of flow maintained by said flow control washer.

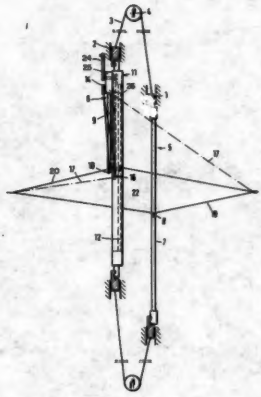
4,609,015

DEVICE FOR PRODUCING A FABRIC EDGE PROVIDED WITH A BINDING (WHIP EDGE)

Heinz Klöcker, Wallenheckenstr. 2, 4280 Borken/Westf. 3, Fed. Rep. of Germany

Filed Oct. 5, 1984, Ser. No. 658,393
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1983, 3336538; Mar. 23, 1984, 3410754
Int. Cl.[4] D03C 11/00
U.S. Cl. 139—54 11 Claims

1. A device for producing a fabric edge provided with a binding thread comprising two harnesses movable in opposite directions along opposed paths of travel between respective end positions, a plurality of warp thread holders on each harness for a respective group of warp threads, said holders having ends with means for guiding the respective warp threads, said ends of the holders on the respective harnesses being spaced apart in the direction of travel of the harnesses in one of said end positions thereof to form a shed from said warp threads, guide means associated with one of said harnesses for



guiding the respective group of warp threads laterally away from the respective holders on said one harness to form an opening in the shed, and a binding thread holder for a binding thread which is to bind the warp threads together, said binding thread holder having an end at which the binding thread is guided, said binding thread holder being movable on said one harness through said opening in the shed to move said end of the binding thread holder, along with said binding thread thereat, transversely in the shed.

4,609,016

Patent Not Issued For This Number

4,609,017

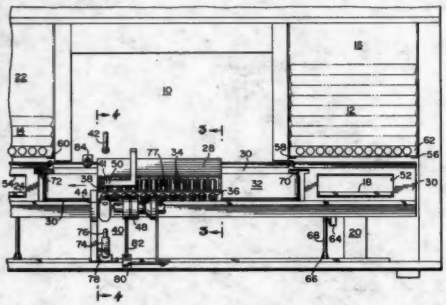
METHOD AND APPARATUS FOR TRANSPORTING CARRIERS OF SEALED SAMPLE TUBES AND MIXING THE SAMPLES

Wallace H. Coulter, Miami Springs, and William F. Rothermel, Hollywood, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Oct. 13, 1983, Ser. No. 541,603
Int. Cl.[4] G01N 1/14
U.S. Cl. 141—1 28 Claims

1. A method for transporting carriers of sealed sample tubes,

said tubes having sample material therein and there being a tube seal sealing one end of each tube, mixing the sample material in the tubes and piercing the tube seals for feeding of the sample material into a sample analyzer, each carrier holding a plurality of the sample tubes, said method comprising the steps of: advancing each of a series of the carriers along a longitudinal and substantially horizontal path from an input location to an output location, there being a seal piercing station between those locations; rocking the path around its longitudinal and substantially horizontal axis such that the



sample tubes undergo a plurality of partial inversions during which the sealed end of each tube is rocked above and below the other end of the tube; said rocking being accomplished a plurality of times and in a sufficient manner for the sample material to be adequately mixed just prior to seal piercing; and stopping said advancing of each of the carriers at the seal piercing station for a time duration sufficient for seal piercing and sample feeding into the analyzer; said rocking being accomplished during at least one of said advancing and stopping steps.

4,609,018

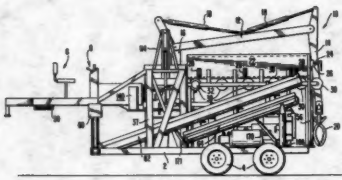
SAW-SPLITTER MACHINE

Thomas L. Barker, 80 Owl Creek Rd., Sheridan, Wyo. 82801

Filed Apr. 2, 1985, Ser. No. 719,238

Int. Cl.[4] B27L *7/00*

U.S. Cl. 144—3 K **14 Claims**



13. Apparatus for cutting wood comprising frame means, operator means at one end of said frame means comprising a control means for controlling operation of said apparatus, loading means for engaging a log and moving said log, log deck means for receiving said log and for selectively allowing said log to move to a first location, first roller means at said first location for receiving said log and moving it along a path, drive roller means adjacent an end of said first roller means for engaging said log and moving one end of said log into a cutting station, second roller means for engaging an end portion of said log when said log is in said cutting station and for holding said end portion during a cutting operation and for releasing said end portion upon completion of said cutting operation, saw means for performing said cutting operation, conveyor means below said cutting station for receiving said end portion after said end portion has been cut from said log and after said second roller means has released said end portion to move said cut end portion to a predetermined location.

4,609,019

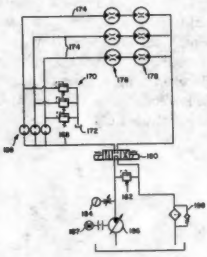
HYDRAULIC FED LOG DEBARKER

James H. Hutson, Rte. 4, Box 925, Pell City, Ala. 35125

Division of Ser. No. 430,794, Sep. 30, 1982. This application Feb. 25, 1985, Ser. No. 704,946

Int. Cl.[4] B27L *1/00*

U.S. Cl. 144—208 E **31 Claims**



1. For a log debarker having at one feed side thereof first, second and third log feed rolls which move a log through the log debarker's rotating debarking tools, a log feed roll drive system comprising:

first, second and third hydraulic motors drivingly connected, respectively, to the first, second and third log feed rolls,

a pump operatively connected to and supplying fluid to said first, second and third hydraulic motors,

a three way flow divider operatively positioned between said hydraulic motors and said pump,

a relief means positioned downstream of said three way flow divider for diverting, away from at least one said hydraulic motor, excess hydraulic fluid flowing from said three way flow divider, and

a directional means for reversing the direction of the log feed rolls and thus the direction of log feed relative to the rotating debarking tools.

4,609,020

LOG DEBARKER TENSIONING SYSTEM

James H. Hutson, Rte. 4, Box 925, Pell City, Ala. 35125

Division of Ser. No. 430,794, Sep. 30, 1982, Pat. No. 4,522,242. This application Feb. 25, 1985, Ser. No. 704,947

Int. Cl.[4] B27L *1/00*

U.S. Cl. 144—208 E **22 Claims**

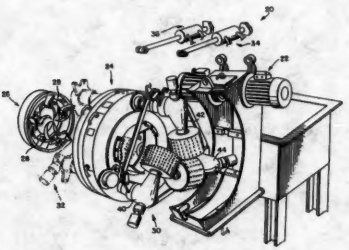
1. A log debarker comprising:

a rotating debarking assembly,

a feed means for feeding logs through said rotating debarking assembly,

a double-acting air cylinder means operatively connected to said feed means for adjusting the position of said feed means,

said double-acting air cylinder means including a sliding piston defining at least in part first and second chambers on opposite first and second sides thereof, respectively, and



said double-acting air cylinder means including a first quick exhaust means connected to said first chamber for maintaining a limited pressure cushion in said first chamber and a second quick exhaust means connected to said second chamber for maintaining a limited pressure cushion in said second chamber.

4,609,021

LOG DEBARKER

Uno Bengtsson, Thims väg 10, S-665 00 Kil, Sweden

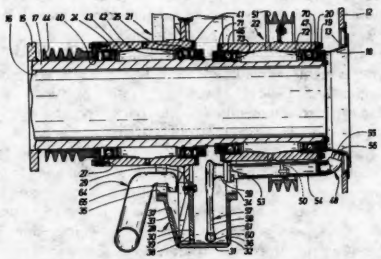
PCT No. PCT/SE84/00035, § 371 Date Oct. 4, 1984, § 102(e) Date Oct. 4, 1984, PCT Pub. No. WO84/03062, PCT Pub. Date Aug. 16, 1984

PCT Filed Feb. 7, 1984, Ser. No. 666,627

Claims priority, application Sweden, Feb. 9, 1983, 8300668

Int. Cl.[4] B27L *3/00*

U.S. Cl. 144—208 D **4 Claims**



1. A log debarker comprising: transport means for transporting a log in longitudinal direction thereof along a predetermined track, at least one water nozzle positioned along said track for directing a water jet towards the log being transported along said track, a water supply channel, a pitot tube having an opening, said at least one nozzle being connected by said water supply channel to said pitot tube, said tube being situated in an annular water housing having a U-shaped radial cross-section, the open side of said cross-section being directed towards the center of the annular water housing, holding means for the pitot tube extending through said open side, supply means for water to the interior of said annular housing, first carrying means for rotating said nozzle in an orbit around said track in a first direction, second carrying means for the annular water housing for rotating the same concentrically to the orbit of rotation of the nozzle in a second direction opposite to said first direction, whereby upon rotation of said nozzle and said annular water housing by means of said first and second carrying means the pitot tube will rotate into the ring of water supplied to the interior of the annular water housing, to thereby force water into the opening of the pitot tube, through said channel, and out through said at least one nozzle in a jet directed at the log on the track in said orbit of rotation.

4,609,022

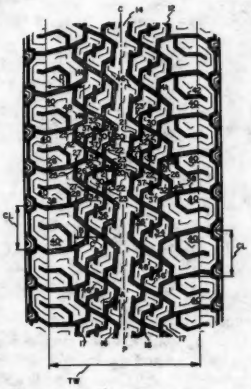
PNEUMATIC TIRE

Harold D. Fetty, Birmingham, Mich., and Daniel J. Lindner, Canal Fulton, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 476,306, Mar. 17, 1983, abandoned. This application Dec. 28, 1984, Ser. No. 687,488

Int. Cl.[4] B60C *11/06*

U.S. Cl. 152—209 R **2 Claims**



1. A pneumatic tire comprising a tread portion which extends about the entire circumference of the tire, said tread portion having at least one circumferentially continuous groove disposed on each side of a mid-circumferential centerplane of said tire, each said circumferentially continuous groove comprising a repeating of series of segments, each said series of segments comprising:

(a) a first segment which is oriented at an angle of between 2° and 20° with respect to the mid-circumferential centerplane of the tire;

(b) a second segment which is oriented at an angle in the range of 60° to 80° with respect to the mid-circumferential centerplane of the tire, an axially innermost end of each second segment communicating with an axially outermost end of a first segment;

(c) a third segment oriented at an angle of between 2° and 20° with respect to the mid-circumferential centerplane of the tire, said third segment having a length that is less than the length of said first segment, an axially innermost end of said third segment communicating with an axially outermost end of a second segment; and

(d) a fourth segment oriented at an angle in the range of 40° to 70° with respect to the mid-circumferential plane of the tire, an axially outermost end of said fourth segment communicating with an axially outermost end of a third segment, and an axially innermost end of a fourth segment communicating with an axially innermost end of a first segment;

said first and third segments of each series of segments having a length less than or equal to about 10% of the width of the tread, said second and fourth segments of each series having a length such that the axially furthermost spaced points of each circumferentially continuous

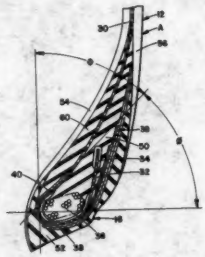
groove are separated by axial distances that are equal to or less than about 15% of the width of the tread, said circumferentially continuous grooves being out of phase with one another; each circumferentially continuous groove communicating with another circumferentially continuous groove through straight connecting grooves, and the axially outermost groove on each side of the tire's mid-circumferential plane communicating with the nearest axial edge of the tread through a connecting groove.

4,609,023

PNEUMATIC TIRE WITH SIDEWALL INSERT

Robert P. Loser, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 19, 1984, Ser. No. 683,825
Int. Cl.[4] B60C *9/02*
U.S. Cl. 152—454 **20 Claims**



1. A pneumatic tire comprising:

a body including a ground-engaging tread portion, a pair of sidewall portions and a pair of bead portions;

an annular substantially inextensible bead reinforcing member positioned in each of said bead portions;

a carcass ply positioned in said pair of sidewall portions and said ground-engaging tread portion and extending from one of said bead portions to the other of said bead portions;

a first elastomer reinforcing member positioned in each bead portion, said first member being disposed axially outwardly of said carcass ply; and,

a second elastomer reinforcing member positioned in each bead portion, at least a portion of said second member being disposed axially inwardly of said carcass ply as well as an end section of said carcass ply folded around said bead reinforcing member, said second member portion extending radially outwardly from approximately adjacent each bead reinforcing member to a point spaced from the tire nominal rim diameter no higher than 65% of the section height, wherein said carcass ply adjacent said bead reinforcing member is disposed at an angle of not less than approximately 40 degrees to the centerline of the tire due to the positioning of said second elastomer reinforcing member portion axially inwardly of said carcass ply.

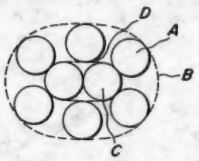
4,609,024

PNEUMATIC RADIAL TIRE CORD FOR BELT

Joji Yatsunami, Tokyo, and Tamio Araki, Fuchu, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed May 2, 1985, Ser. No. 729,779
Claims priority, application Japan, May 8, 1984, 59-66023[U]
Int. Cl.[4] D07B *1/06*; B60C *9/00*
U.S. Cl. 152—527 **2 Claims**

1. In a pneumatic radial tire comprising a carcass of a radial cord structure and a belt of cord structure superimposed about a crown of the carcass, the improvement wherein the cord for the belt is a metallic cord comprising a core of two metallic wires and an outer layer of six metallic wires disposed about



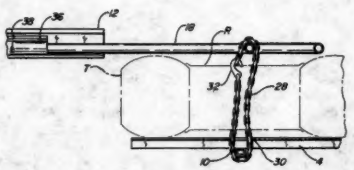
the core, all of said metallic wires having the same diameter and twisting direction and a form ratio of 90~110%.

4,609,025

TIRE AND RIM SAFETY RESTRAINT DEVICE

Ronald E. Messenger, Mogadore, Ohio, assignor to GenCorp Inc., Akron, Ohio

Filed Sep. 27, 1985, Ser. No. 780,872
Int. Cl.[4] B60C *25/00*
U.S. Cl. 157—1 **9 Claims**



1. A restraint device for use in inflating tires on multiple-piece rims, said restraint device designed to be mounted on a service vehicle having two horizontal frame members and a hydraulically vertically adjustable platform mounted on the vehicle, said restraint device comprising:

(a) a top restraint frame mountable on the horizontal vehicle frame members and slidable between a storage position under the vehicle body and an operating position in which the top restraint member extends partly over the vertically adjustable platform, the top restraint frame having two horizontally spaced elongated side structural members positioned to be supported on the horizontal vehicle frame members, spaced apart inner and outer crosswise structural members connected between the side structural members, and a central structural member connected between the crosswise structural members, the crosswise and central structural members being located above the vertically adjustable platform when the top restraint frame is in its operating position;

(b) an elongated flexible rim restrainer having means for being secured at a location on the vertically adjustable platform which is directly beneath the junction of the central structural member with the inner crosswise structural member when the top restraint frame is in its operating position, said flexible rim restrainer also having a hook means at one end for securing the end of the restrainer to another portion of the restrainer to fix the restrainer in a position extending between the platform and the top restraint frame at the said junction; and

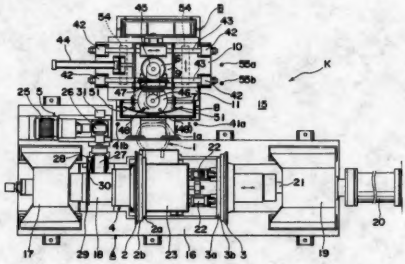
(c) two housing members mountable on the vehicle frame, said housing members slidably housing the side structural members of the top restraint frame and restraining the upward movement of the side structural members.

4,609,026

AUTOMATIC SIPE FORMING MACHINE

Kazuaki Kondoh, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Mar. 14, 1984, Ser. No. 589,414
Claims priority, application Japan, Mar. 18, 1983, 58-46556
Int. Cl.[4] B29H *21/08*
U.S. Cl. 157—13 **12 Claims**



1. An automatic sipe forming machine for forming sipes at a predetermined depth on a circumferential tread face of a tire having a defined curvature comprising:

a tire support apparatus; and

a sipe forming apparatus;

said tire support apparatus comprising

a tire bearing mechanism including a pair of first and second rims said tire being rotatably supported by said first and second rim; and

an intermittent rotary mechanism for intermittently rotating said tire at intervals at a predetermined angle;

said sipe forming apparatus comprising

at least one disc cutter for forming said sipes on said tread face of said tire, which is rotated by a motor in a plane including an axis of said tire;

a sliding beam having a curvature arranged to follow said curvature of said circumferential tread face of said tire so as to regulate the depth of said sipes formed by said disc cutter such that said depth of said sipes becomes smaller at shoulder portions of said tire tread than at a central portion of said tire tread in accordance with the curvature of said sliding beam;

a cutter holder for supporting said disc cutter and said sliding beam;

a carriage for reciprocatingly guiding said cutter holder in a left and right direction; and

a guide member for reciprocatingly guiding said carriage in a forward and rearward direction.

4,609,027

OVERHEAD DOOR

Daniel N. Keller, Rte. 4, Box 157, River Falls, Wis. 54022

Filed Jun. 27, 1985, Ser. No. 749,229
Int. Cl.[4] E05D *15/26*
U.S. Cl. 160—207 **6 Claims**

1. An overhead door for a doorway, with the doorway having a horizontal header and first and second vertical door jambs located on opposite ends of the horizontal header, comprising, in combination:

an upper door panel having a first side, a second side, an upper edge, and a lower edge;

first hinge means for hinging the upper edge of the upper door panel to the horizontal header about a horizontal axis;

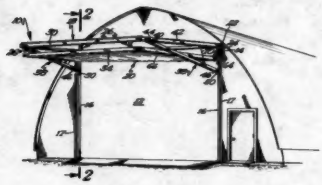
a lower door panel having a first side, a second side, an upper edge, and a lower edge;

second hinge means located adjacent the upper edge of the lower door panel and the lower edge of the upper door panel for hinging the lower door panel to the upper door panel about a horizontal axis, with the upper and lower door panels cooperating to close the doorway, with the lower door panel having a predetermined height in the vertical, closed position of the door;

first and second elongated brace members having first and second ends, with the first ends of the brace members being pivotally mounted on the first and second sides of the upper door panel about a horizontal axis, and with the length of the first and second brace members being greater than the height of the lower door panel;

roller means located on the second ends of the brace members for rolling on the vertical door jambs of the door opening;

roller means located on the sides of the lower door panel adjacent its lower edge for rolling on the vertical door jambs of the door opening;



power means for moving the upper and lower door panels between a first closed position wherein the upper and lower door panels are in a vertical, aligned condition and a second open position where the upper and lower door panels are in a generally horizontal position and generally parallel to each other; and

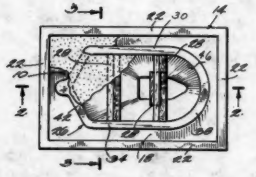
first and second flaccid means secured between the lower door panel and the first and second brace members for allowing the roller means of the lower door panel to engage with the vertical door jambs of the door opening when the door panels are between their first, closed position and adjacent their second, open position, whereby the roller means of the brace members engage with the vertical door jambs of the door opening when the door panels are in their second, open position and the brace members thereby provide an angular support between the lower edge of the upper door panel and the vertical door jambs of the door opening.

4,609,028

EVAPORATIVE PATTERN ASSEMBLY FOR USE IN SAND CASTING

Russell J. VanRens, West Allis, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 20, 1984, Ser. No. 622,718
Int. Cl.[4] B22C *7/02*
U.S. Cl. 164—34 **7 Claims**



1. An evaporative pattern assembly for use in sand casting and comprising a pattern fabricated from evaporative material

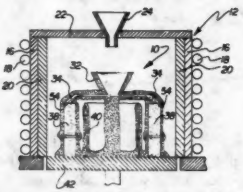
and including spaced wall portions forming a cavity, and means for preventing distortion of said pattern, said means being fabricated from nonevaporative material and extending exteriorly of said evaporative material and across said cavity and between said wall portions of said pattern and only partially filling said cavity so that sand can flow around and about said distortion preventing means so as to otherwise fill said cavity with sand.

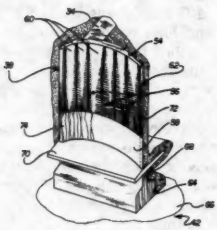
4,609,029

METHOD OF REDUCING CASTING TIME

Constantine Vishnevsky, Solon, and Thomas A. Kolakowski, Moreland Hills, both of Ohio, assignors to TRW Inc., Cleveland, Ohio

Continuation of Ser. No. 239,143, Feb. 27, 1981, abandoned.
This application Oct. 28, 1985, Ser. No. 792,632
Int. Cl.[4] B22D *27/04*
U.S. Cl. 164—122 5 Claims





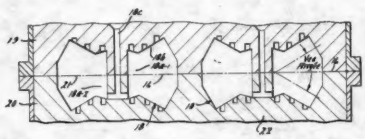
1. A method of casting an article in a mold cavity, said method comprising the steps of heating at least a portion of a mold in a furnace, pouring molten metal into a cavity in the mold, withdrawing the mold from the furnace at a first rate after having performed said step of pouring molten metal into the mold cavity, solidifying the molten metal in the mold cavity while performing said step of withdrawing the mold from the furnace at the first rate, said step of solidifying the metal in the mold cavity including the steps of forming a dendritic structure having molten metal in its interstices, solidifying portions of the molten metal in the interstices and continuing the formation of the dendritic structure until the dendritic structure reaches an upper end of the mold cavity while performing said step of solidifying portions of the molten metal in the interstices, and increasing the rate of solidification of the molten metal in the interstices of the dendritic structure as soon as the dendritic structure reaches the upper end of the mold cavity, said step of increasing the rate of solidification of the molten metal includes the step of increasing the rate at which the mold is withdrawn from the furnace from the first rate to a second rate as soon as the dendritic structure reaches the upper end of the mold cavity.

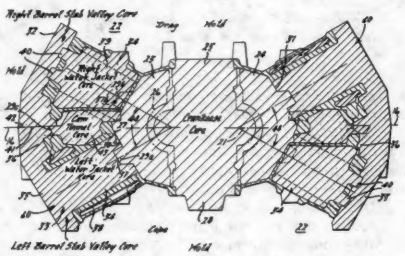
4,609,030

METHOD OF INCREASING PRODUCTIVITY OF CASTING VEE CONFIGURATION ENGINE BLOCKS IN A GIVEN MOLD

Thomas J. Heater, Garden City, and Murray P. Donnelly, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 6, 1985, Ser. No. 805,655
Int. Cl.[4] B22D *33/04*
U.S. Cl. 164—137 11 Claims





1. A method of metal casting, comprising:

(a) planting a plurality of siamesed refractory core assemblies in a two-part mold having a single parting plane, each said assembly of refractory cores in cooperation with said mold defining an engine block casting cavity with a Vee angle configuration, each said casting cavity having the bisector of said Vee angle aligned with said mold parting plane; and

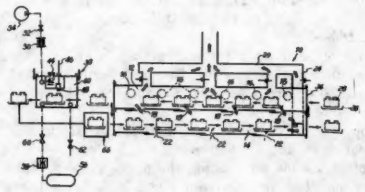
(b) introducing molten metal to said cavities to form solidified engine block castings.

4,609,031

SYSTEM FOR SINTERING MOLDS AND FOR PREPARING CAST PRODUCTS

Nobuyoshi Sasaki, Yokohama, Japan, assignor to M.C.L. Co., Ltd., Kanagawa, Japan

Filed Jun. 22, 1984, Ser. No. 623,384
Claims priority, application Japan, Jul. 4, 1983, 58-120323
Int. Cl.[4] B22D *27/00*
U.S. Cl. 164—270.1 12 Claims



1. A system for sintering molds and for preparing cast products by casting a molten metal in said molds, and controlling the cooling rate of said metal, said system comprising:

a sintering-annealing furnance contained within a single housing, said sintering-annealing furnance including a sintering furnace section and juxtaposed therewith an annealing furnace section, said sintering and annealing furnace sections being separated by a common partition wall with a plurality of ventilating windows therein, said sintering furnace section including section means for sintering molds therein and said annealing furnace section including cooling means for cooling said metal contained in said molds at a controlled slow cooling rate, said plurality of ventilation windows being formed in said partition walls for communicating between said annealing and said sintering furnace sections by selectively passing controlled amounts of heated air from said sintering furnace section through said plurality of ventilation windows in said partition wall to said annealing furnace said cooling means including a plurality of inlet ports, said inlet ports providing direct communication between said annealing furnance section and surrounding ambient air wherein said ventilation windows and said inlet ports are used in controlling said cooling rate within said annealing furnance section;

a casting chamber device disposed next to an output of said sintering furnace section to cast said molten metal into said molds; and

a cooling device disposed between said casting device and an entrance opening of said annealing furnace to rapidly cool said molten metal contained in said molds to a temperature which is higher than the solid solution forming temperature range.

4,609,032

NOZZLE ASSEMBLY FOR DIE CASTING MACHINE

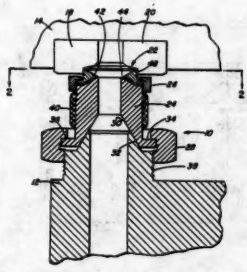
Guido Perrella, 9 Belvedere Road, Westmount, Quebec, Canada

Filed Feb. 25, 1985, Ser. No. 705,941

Claims priority, application Canada, Feb. 29, 1984, 448519

Int. Cl.[4] B22D *17/20, 17/30*

U.S. Cl. 164—312 **1 Claim**



1. A nozzle assembly for use in injection molten metal into the cavity of a die casting machine of the type having a pair of mold halves which simultaneously move toward and away from a mold parting line so as to engage and disengage said nozzle assembly located on the parting line;

said nozzle assembly comprising a nozzle and an adaptor for retaining said nozzle on the end of a gooseneck injector means;

said adaptor having an outer terminal end comprising a narrow, raised rim;

said nozzle comprising a shallow body with entrance and exit ends and having wide, frusto-conical entrance and exit surfaces;

said entrance end having a circular shoulder for engagement by adaptor clamping means;

said exit end having a narrow rectangular peripheral rim to present a small contact area of the nozzle to adjacent surfaces of said mold halves;

and

said nozzle including a generally centrally located, flat circular seat for engagement with said narrow raised rim of said adaptor;

said seat having a sufficient diameter to provide a horizontal floating area for the nozzle on said adaptor so that said nozzle may assume a correct location at every injection shot in response to inserts closing around said nozzle.

4,609,033

APPARATUS FOR COMPACTING FOUNDRY MOLD MAKING MATERIALS

Alfons Köbel, Karlsruhe; Norbert Damm, Karlsdorf; Werner Geiger, Pfinztal, and Günter Müller, Karlsruhe, all of Fed. Rep. of Germany, assignors to BMD Badische Maschinenfabrik Durlach GmbH, Karlsruhe, Fed. Rep. of Germany

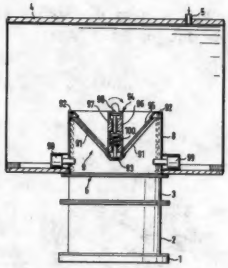
Division of Ser. No. 453,093, Dec. 27, 1982, Pat. No. 4,529,026.

This application May 21, 1985, Ser. No. 736,261

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1981, 3151645; Feb. 20, 1982, 3206208

Int. Cl.[4] B22C *15/00*

U.S. Cl. 164—169 **39 Claims**



1. An apparatus for compacting foundry mold making material, comprising a pressure vessel, a mold flask placed thereunder with a filling space therein, a pattern support plate forming a floor of said space, and a valve placed between the pressure vessel and the mold space, said apparatus being designed for causing expansion of said compressed gas out of said pressure vessel into said mold space as far as a pressure of 8 bar at the most with a gas throughput rate of more than 50 kg/sec and with a pressure increase rate in the said mold space of more than 300 bar/sec, the opening cross section of said valve being between 50% and 150% of the horizontal cross section of the inside of the flask, and wherein said valve has an elastically deforming closing member designed to be moved clear of the desired opening cross section mostly by the effect of pressure in the said pressure vessel.

4,609,034

INFRARED CAMOUFLAGE SYSTEM

Robert Kosson, Massapequa; Jonas Bilenas, Melville; Salvatore Attard, Huntington, and Theodore Hilgeman, Centerport, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Apr. 17, 1984, Ser. No. 601,150

Int. Cl.[4] F41H *3/00*

U.S. Cl. 165—1 **10 Claims**

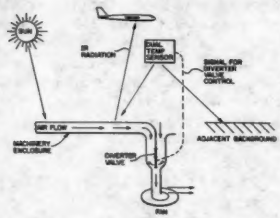
9. A process for camouflaging an equipment enclosure from IR detection comprising the steps:

forcing fluid flow through at least one panel of the enclosure, the panel having hollow wall construction with a passageway defined therethrough;

supplying supplementary air at the exit of the passageway;

sensing the radiance from the enclosure and adjacent background;

adjusting the fluid flow and supplementary air flow until the



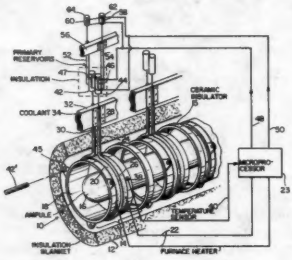
sensed radiance from the enclosure matches that from the background, within preselected limits.

4,609,035

TEMPERATURE GRADIENT FURNACE FOR MATERIALS PROCESSING

Robert Haslett, Dix Hills, and William Harwell, Coram, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Feb. 26, 1985, Ser. No. 705,826
Int. Cl.[4] F25B *29/00*
U.S. Cl. 165—2 **11 Claims**



8. A method for creating sharp thermal gradients along the length of metal or semiconductor material, comprising the steps:

defining a plurality of contiguous axial thermal segments;

encircling the material with at least one heat pipe thermally communicating with a heat exchanger;

selectively expanding inert gas into the heat pipe for blocking heat exchange between fluid in the heat pipe and coolant in the exchanger when heating the material;

thermally soaking the material for a preselected period;

compressing the inert gas for removing it from the heat pipe thereby enabling rapid cooling of the material associated with the segment;

preprogramming the cooling cycles for each segment to create sharp thermal gradients along the entire length of the material.

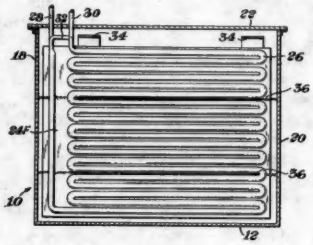
4,609,036

BULK HEAT OR COLD STORAGE DEVICE FOR THERMAL ENERGY STORAGE COMPOUNDS

Marguerite D. Schrader, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 7, 1985, Ser. No. 763,364
Int. Cl.[4] F28D *21/00*
U.S. Cl. 165—10 **12 Claims**

1. A storage device comprising a container having a bottom wall, a top wall, and at least one side wall, a hydrated phase change material contained in said container and capable of absorbing latent heat energy during the melting cycle of the material and which is capable of releasing latent heat energy during the freezing cycle of the material, a plurality of generally planar heat transfer devices positioned in said container in a substantially vertical orientation, said heat transfer devices being connected to each other in series and spaced in a predetermined variable relationship with respect to each other and the side walls of the container, for flow of a heat exchange fluid through said heat transfer devices, and a screen positioned in a substantially horizontal position in said container, said screen being arranged in a spaced position above the bottom of the container.

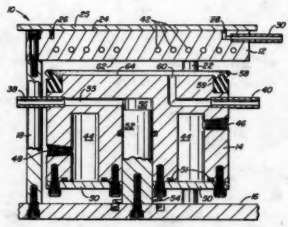


4,609,037

APPARATUS FOR HEATING AND COOLING ARTICLES

William R. Wheeler, Saratoga, and Steven R. Lee, Mountain View, both of Calif., assignors to Tencor Instruments, Mountain View, Calif.

Filed Oct. 9, 1985, Ser. No. 786,231
Int. Cl.[4] F25B *29/00*; F28F *7/00*; F28D *11/00*
U.S. Cl. 165—61 **8 Claims**



1. Apparatus for heating and cooling an article comprising,

a first thermally conductive plate having opposed first and second major thermally conductive surfaces, the first surface having first clamping means for securely holding an article in tight contact therewith, the first plate having heating means disposed in thermal communication with said first surface for heating said first surface,

a second thermally conductive plate having a major thermally conductive surface, the second plate having cooling means disposed in thermal communication with said major surface for removing heat from said first plate, the second plate mounted in at least partially spaced relation from the first plate, and

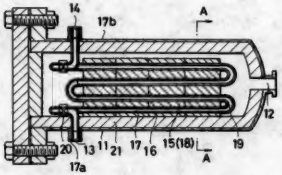
second clamping means for removable urging the major thermally conductive surface of the second plate to contact the thermally conductive second surface of the first plate thereby establishing thermal communication between the first and second plates.

4,609,038

HEAT EXCHANGER USING A HYDROGEN OCCLUSION ALLOY

Hiroshi Ishikawa; Keisuke Oguro; Hiroshi Suzuki; Akihiko Kato; Teruya Okada; Shizuo Sakamoto; Iwao Nishimura, all of Osaka, and Keizo Sakaguchi, Hyogo, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo and Kurimoto, Ltd., Osaka, both of, Japan

Filed Jul. 24, 1985, Ser. No. 758,624
Claims priority, application Japan, Nov. 30, 1984, 59-254416
Int. Cl.[4] F17C *11/00*
U.S. Cl. 165—104.12 11 Claims



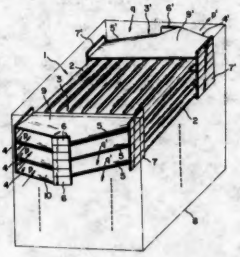
1. A heat exchanger using a hydrogen adsorption alloy arranged in a pressure vessel **11** equipped with a hydrogen supply inlet **12**, a heating medium or cooling medium supply inlet **13** and an exhaust outlet **14** thereof, said heat exchanger being characterized in that surfaces of fine particles of hydrogen adsorption alloy are coated with a dissimilar metal by plating, the coated fine particles are then formed into a compact **15** of hydrogen adsorption alloy by compression molding, said compact **15** is provided with through holes **16** in which heat exchanging pipes **17** are inserted for direct contact therewith, and the ends of each pipe **17** are respectively communicated with said supply inlet **13** and with said exhaust outlet **14**.

4,609,039

COUNTERFLOW HEAT EXCHANGER

Takeo Fushiki; Koji Takahashi, both of Moriyama, and Morio Okazaki, Yokohama, all of Japan, assignors to Japan Vilene Co. Ltd. and Toyo Netsukogyo Kaisha Ltd., both of Tokyo, Japan

Filed Oct. 4, 1983, Ser. No. 538,996
Claims priority, application Japan, Oct. 5, 1982, 57-175052
Int. Cl.[4] F28F *9/02, 3/00*
U.S. Cl. 165—174 7 Claims



1. A heat exchanger formed of a plurality of superimposed units sealed together, each of said units comprising:

a plurality of parallel elongated hollow heat exchange tubes;

inlet and outlet headers located at respective ends of said plurality of said elongated heat exchange tubes and in fluid communication with the hollow interiors of said heat exchange tubes;

each of said headers comprising a tube sheet perpendicular to said tubes for supporting the tubes at one end, top and bottom plate members, and said plate members forming flow directing means for directing incoming tube side fluid along a path toward said tube sheet oblique with respect to said tube sheet, said flow directing means including an end face defining an opening to the header interior and a closed end face, said end face defining said opening and said closed end face being joined at an apex and extending obliquely from said apex toward said tube sheet;

wherein said top and bottom plate members define surfaces which are gradually and continuously sloped both to converge toward each other at said closed end face and to diverge toward said opening; and

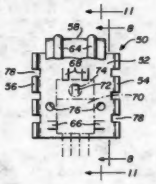
wherein the end faces providing said openings are sealed to like adjacent end faces to prevent fluid flow therebetween and said closed end faces are spaced apart to allow sheet side fluid to enter and exit therebetween in a direction oblique to said tube sheet while passing in contact with the exteriors of said elongated heat exchange tubes.

4,609,040

SELF-SECURING HEAT SINK

Marvin F. Moore, Carrollton, Tex., assignor to Thermalloy Incorporated, Dallas, Tex.

Filed Apr. 1, 1985, Ser. No. 718,556
Int. Cl.[4] H01L *23/40*
U.S. Cl. 165—80.3 8 Claims



1. A self-securing heat sink for transistors and the like, said heat sink comprising a unitary member constructed from malleable material having a high heat transfer coefficient, said unitary member including:

(a) a base portion;

(b) at least one heat radiating fin portion disposed at an angle to said base portion; and

(c) a clip portion extending from and reverse bent over said base portion in spaced relationship to said base portion for receiving a transistor, said clip portion having a free end portion for engaging the transistor; having a medial portion angled toward said base portion; and having first and second spaced apart and generally parallel elongated embossments therein which extend along said clip portion from the intersection thereof with said base portion to a point proximate said free end portion to increase the rigidity and resilience of said clip portion whereby the transistor is engaged by said clip portion to hold the transistor tightly against said base portion.

4,609,041

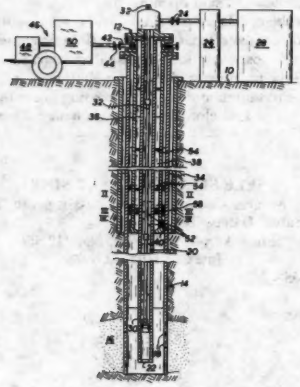
WELL HOT OIL SYSTEM

Richard M. Magda, 194 E. Sterling Rd., Jonesville, Mich. 49250

Filed Feb. 10, 1983, Ser. No. 465,667
Int. Cl.[4] E21B *37/00*
U.S. Cl. 166—62 3 Claims

1. Apparatus for removing paraffin from an oil well wherein the oil well includes an inner tube having a lower end receiving oil and an upper end at a well head from which oil is removed, the improvement comprising a conduit having a lower end communicating with the inner tube intermediate the lower and upper ends thereof and below the paraffin forming region thereof, said conduit having an upper end at the well head,

means for selectively introducing hot fluid into said conduit upper end, check valve means adjacent said conduit lower end intermediate the tube and said conduit permitting fluid flow from said conduit into the inner tube and preventing fluid flow from the inner tube into said conduit, said conduit comprising a second tube encompassing the inner tube, said conduit lower end being substantially sealed with respect to the inner tube, a plurality of ports defined in the inner tube adjacent said conduit lower end establishing communication between the inner tube and said conduit lower end, said check valve means being located within said second tube above said ports, said check



valve means comprising a first flat annular disc sealingly interposed between the inner tube and said second tube, at least one orifice defined within said first disc, and a second flat annular disc movably mounted within said second tube adjacent to and below said first disc adapted to be forced against the underside of said first disc to seal said orifice thereof by fluid pressure below said second disc, at least one orifice defined in said second disc to permit fluid flow therethrough, support means supporting said second disc adjacent to and below said first disc and orientation means defined on said second disc maintaining misalignment of said orifices of said first and second discs.

4,609,042

INFLATABLE SAFETY BLADDER

Ronnie J. Broadus, P.O. Box 418, Belle Chasse, La. 70037; Randall Slade, Belle Chasse, La., and John W. Wegner, Deer Park, Tex., assignors to Ronnie J. Broadus, New Orleans, La.

Filed Nov. 7, 1984, Ser. No. 669,237
Int. Cl.[4] E21B *33/127*
U.S. Cl. 166—187 **21 Claims**

1. A casing safety device for preventing tools from falling into a well casing, comprising:

an inflatable, resilient bladder for placement in said well casing adjacent the upper end of said casing, said bladder being conformable in at least partially sealing relationship to the walls of said casing when inflated;

means for introducing pressurized fluid into said bladder to inflate it;

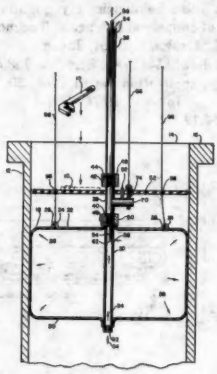
a hollow core for said bladder through which fluid may pass from the downhole side of said bladder to the top side thereof;

a check valve for permitting the flow of fluid from the downhole side of said bladder; and

a vent for conveying fluid passed through said check valve from the downhole side of said bladder to a distance above said casing.

12. A method for preventing tools from falling into a well casing and for venting downhole gases to a distance above said casing, comprising:

placing an inflatable, resilient bladder in said well casing, said bladder having a hollow core through which gases



may pass from the downhole side of said bladder to the top side thereof;

inflating said bladder; and

providing a vent for conveying gases passed through said core to a distance above said casing.

4,609,043

ENHANCED OIL RECOVERY USING CARBON DIOXIDE

Alvin S. Cullick, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 22, 1984, Ser. No. 663,259
Int. Cl.[4] E21B *43/22*
U.S. Cl. 166—268 **13 Claims**

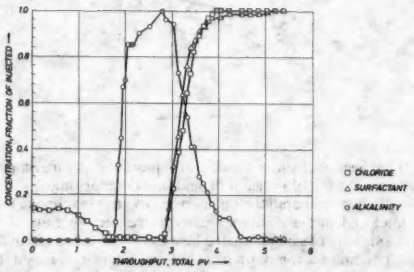
1. A method for increasing the solubility of a polymer in dense-phase carbon dioxide, which comprises dissolving a substantially water-insoluble polymer in dense-phase carbon dioxide in the presence of an entrainer which is soluble in the dense phase carbon dioxide.

4,609,044

ALKALI-ENHANCED STEAM FOAM OIL RECOVERY PROCESS

Hon C. Lau, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 20, 1985, Ser. No. 736,008
Int. Cl.[4] E21B *43/24*
U.S. Cl. 166—270 **9 Claims**



1. In a process in which steam and steam-foaming surfactant

are injected into a subterranean reservoir for displacing a relatively acidic oil toward a production location, an improvement comprising:

injecting into the reservoir, at least as soon as at least some portion of the steam is injected, (a) a kind and amount of water soluble, alkaline material effective for ion-exchanging multivalent ions from the reservoir rocks and precipitating compounds containing those ions and for causing the aqueous liquid phase of the injected fluid to form soaps of substantially all of the petroleum acids in the reservoir oil, and (b) at least one surfactant arranged for foaming the steam and providing a preformed cosurfactant material capable of increasing the salinity requirement of an aqueous surfactant system in which soaps derived from the reservoir oil comprise a primary surfactant.

4,609,045

METHOD AND APPARATUS FOR CLEANING THE SCREEN INLET PORTION OF A WATER WELL CASING

Sterlie R. Rogers, 104 Nimitz Dr., Dayton, Ohio 45431

Filed Jul. 2, 1985, Ser. No. 751,366
Int. Cl.[4] E21B *37/08*
U.S. Cl. 166—312 **8 Claims**

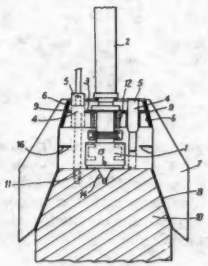
1. Apparatus adapted to be supported by a cable depending from a crane for cleaning the screen inlet portion of a water well casing extending into the ground, comprising a cleaner assembly adapted to be lowered downwardly into the casing and having means for cleaning material from the inlet portion and means for removing the material cleaned from the inlet portion, a fluid actuated cylinder assembly including a piston supported for reciprocating movement within a cylinder, the cylinder assembly having means for connecting the cylinder assembly to the cable extending from the crane to suspend the cylinder assembly above the well casing with the crane, means extending downwardly from the cylinder assembly and connected to the cleaner assembly for supporting the cleaner assembly in suspended relation within the well casing, means including a fluid control valve for supplying fluid to the cylinder and for exhausting fluid from the cylinder, and means for actuating the valve to effect reciprocation of the piston and corresponding reciprocation of the cleaner assembly within the well casing for cleaning the screen inlet portion without requiring reciprocation of the cable depending from the crane.

4,609,046

PRODUCTION RISER FOOT AND A PROCESS FOR IMPLEMENTING SAME

Jean C. Schawann, Idron; Jean P. Caumont, Pau, and Jean Falcimaigne, Bois Colombes, all of France, assignors to Societe Nationale Elf Aquitaine (Production), Paris, France

Filed Sep. 14, 1984, Ser. No. 650,791
Claims priority, application France, Sep. 15, 1983, 83 14666
Int. Cl.[4] E21B *43/013*
U.S. Cl. 166—341 **5 Claims**



1. In a production riser foot for connecting a central tube having a connector with an underwater well head comprising, in combination:

a support means carried by said central tube and having a truncated collar surface radially outwardly spaced from said tube;

a guide funnel having an internal shoulder surface of corresponding shape as said collar surface and freely resting thereon for limited axial misalignment with respect to said central tube;

said guide funnel having a skirt with an internal surface radially outwardly from said internal shoulder surface and spaced axially therefrom for centering the connector and central tube with respect to the well head;

said truncated collar surface supporting said guide funnel at said internal shoulder surface for carrying said funnel during lowering of the central tube, connector, and funnel toward said well head;

said truncated collar surface being separable from the internal shoulder surface of the guide funnel after said funnel skirt is engaged with said well head for continued lowering of the central tube and connector for making the connection with the well head.

4,609,047

QUICK RELEASE MECHANISM FOR SPRINKLER HEAD

George S. Pieczykolan, North Wales, Pa., assignor to Central Sprinkler Corporation, Landsdale, Pa.

Filed Jul. 30, 1984, Ser. No. 635,767
Int. Cl.[4] A62C *37/14*
U.S. Cl. 169—38 **8 Claims**

1. Sprinkler head provided with a fluid outlet port, comprising:

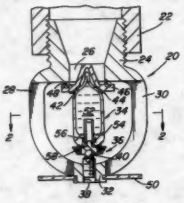
(a) a frangible element and heat expansible fluid contained therein,

(b) a thermally conductive element extending through a wall portion of said frangible element,

(c) said thermally conductive element having a first portion disposed within the interior of the frangible element so as to contact said heat expansible fluid and a second portion disposed outside the frangible element and exposed to surrounding air such that the thermally conductive element conducts heat from the surrounding air to said heat

expansible fluid so as to cause the fluid to expand and rupture the frangible element,

(d) a cap supportably mounted on said frangible element and disposed in juxtaposition with the fluid output port so as to releasably seal said fluid outlet port, and



(e) loading means for loading said frangible element under compression so as to maintain said cap in sealing relation with said outlet port and including a thermally conductive support member disposed so as to contact said second portion of said thermally conductive element outside said frangible element.

4,609,048

APPARATUS FOR AUTOMATICALLY EXTINGUISHING FIRE

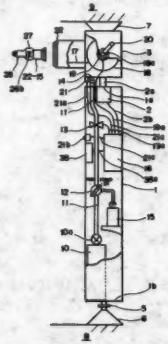
Susumu Yasaki, Funabashi; Yoshinori Ishisi, Tokyo; Susumu Mitsushima, Ise, and Takashi Nakamura, Chigasaki, all of Japan, assignors to Shinko Electric Co., Ltd. and Secom Co., Ltd., both of Tokyo, Japan

Filed Apr. 18, 1984, Ser. No. 601,571

Claims priority, application Japan, Apr. 18, 1983, 58-68237; May 10, 1983, 58-81481

Int. Cl.[4] A62C *37/18*

U.S. Cl. 169—61 **9 Claims**



8. A fire extinguishing apparatus comprising:

a casing;

a tank mounted on said casing and containing a pressurized fire extinguishing agent;

a chamber mounted on said casing and rotatable about a vertical axis;

a pipe for providing fluid communication between said tank and said chamber;

valve means mounted on said pipe for normally interrupting communication between said tank and said chamber;

drive means for rotatably driving said chamber;

an axially-expandable hollow rod having a first end coupled to an in fluid communication with said chamber, and an open end;

closure means normally closing said rod open end;

means for disengaging said closure means to open said rod open end;

a fire sensor for detecting a fire and providing a detecting signal corresponding to a position of said fire;

braking means, disposed in said chamber and in said hollow rod, for arresting the axial expansion of said hollow rod; and

control means responsive to said detecting signal for activating said drive means to rotate said chamber until said hollow rod is pointing to said fire, and for opening said valve means to allow said pressurized fire extinguishing agent to move from said tank, through said pipe and said chamber to said hollow rod to axially expand it, and for controlling said braking means to arrest said axial expansion when said free end is adjacent said fire, and for activating said disengaging means to permit said fire extinguishing agent to exit said rod open end to said fire.

4,609,049

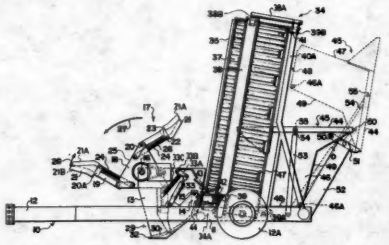
ROTARY WHEEL TYPE ROCK PICKER

Thomas Migdal, Box 196, Lipton, Saskatchewan, Canada (S0G 3B0)

Continuation-in-part of Ser. No. 371,594, Apr. 26, 1982. This application Apr. 16, 1984, Ser. No. 601,045

Int. Cl.[4] A01B *43/00*; A01D *17/18, 19/02*

U.S. Cl. 171—63 **4 Claims**



1. A stone picker assembly comprising in combination a wheel mounted supporting chassis, a pick up reel journalled for rotation in said chassis about an axis transversely thereof, a rake component supported in said chassis and inclining downwardly and forward for ground engagement by a leading edge thereof, and curved around said pick-up reel axis so that said reel conveys material upwardly along the rake component, said pick-up reel including a plurality of transversely extending spaced and parallel pick-up bars secured thereto parallel to said pick-up reel axis, said rake component including a plurality of spaced and parallel longitudinally extending bars, each of said pick-up bars carrying a plurality of teeth spaced therealong and arranged such that each tooth passes between a respective pair of adjacent longitudinally extending bars of said rake component as said reel rotates, each tooth comprising a flat plate member lying in a respective plane radial to said pick-up reel axis and defining a leading edge and a trailing edge which converge toward an end of the tooth of greater spaced from said pick-up reel axis, the teeth of each of said bars being arranged on the respective bar alternately forwardly and rearwardly of the bar relative to its direction of movement around the pick-up reel axis such that two adjacent teeth in side elevation define a generally wedge-shaped gap between a forward edge of one of the two and a trailing edge of the other of the two, a vertical cylindrical screening wheel journalled for rotation about a horizontal axis longitudinal of said chassis such that the wheel is situated behind said pick-up reel, means mounting said screening wheel for rotation and means to drive said screening wheel, said screen wheel having an open front face for receiving material from said reel and an open rear face

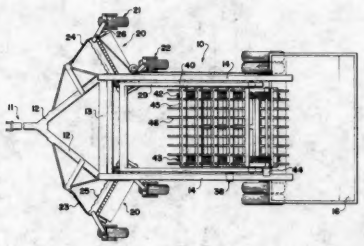
for discharge therefrom of said stones, means to initially retain within said screen wheel said material from said reel deposited on the lower side of said wheel until said material is elevated to a predetermined level by rotation of said wheel, a stone receiving container in said chassis rearwardly of said screening wheel, and said means to move said container from a stone receiving position to a stone dumping position and vice versa, said screening wheel having a peripheral cylindrical surface formed from a plurality of parallel spaced slats extending from said open front face of the wheel to said open rear face thereof, the slats being arranged to lie at an angle to a line in the surface parallel to the axis of rotation thereof such that an end of each slat adjacent the front face rotates angularly advanced relative to an end thereof adjacent the rear face such that said slats constitute the sole means for throwing said stones from said wheel into said container.

4,609,050

ROOT AND ROCK PICKER

Maurice A. Jacobs, Box 68, Sylvania, Saskatchewan, Canada (S0E 1S0), and Alvin L. Wozniakoski, Box 602, Tisdale, Saskatchewan, Canada (S0E 1D0)

Filed Feb. 8, 1985, Ser. No. 700,005
Claims priority, application Canada, Feb. 24, 1984, 448261
Int. Cl.[4] A01B *43/00*; A01D *25/04*
U.S. Cl. 171—65 **5 Claims**



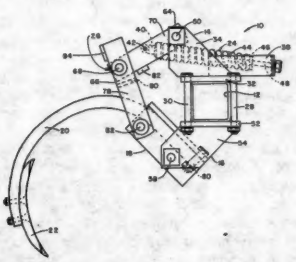
1. A root picker comprising a main frame including ground wheels and hitch means for engaging a tractor for drawing the main frame on said ground wheels for movement in a transport direction across ground to be picked, a picking roller having a plurality of radially extending axially spaced teeth, means for rotating the picking roller about an axis for engaging roots to be picked, a picking frame which is triangular in side elevation, the picking roller being mounted on said frame at one apex thereof with the axis of rotation of the roller being transverse to the transport direction, means mounting the picking frame on the main frame for pivotal movement relative thereto about a horizontal axis at a second apex of the picking frame spaced from the picking roller axis forwardly and upwardly thereof whereby the picking roller and frame can raise relative to the main frame and whereby the weight of the picking roller and frame drive the picking roller teeth into the ground, lifting and conveying means comprising an endless conveyor drivable about a lower lifting means axis and an upper lifting means axis and having a plurality of radially extending axially spaced teeth drivable about said lifting means axes, said lower lifting means axis being arranged parallel to and forwardly of the picking roller axis such that the lifting means teeth engage and dig into the ground forwardly of the picking roller teeth and are axially offset from the picking roller teeth to pass therebetween and to cooperate with the picking roller teeth to lift roots over the picking roller axis, said lifting means being mounted on the picking frame at a third apex thereof for movement therewith and for pivotal movement relative thereto about an axis at said third apex parallel to the lower lifting means axis and spaced upwardly and rearwardly therefrom whereby the space between the picking roller axis and the lifting means axis can increase, an inclined conveyor surface formed by a plurality of slats parallel to a direction of motion of the roots and arranged such that the teeth of the picking roller and lifting means project in between the slats and a bucket for receiving said roots mounted on said main frame rearwardly of said conveyor surface.

4,609,051

TRIP SHANK MECHANISM

Garry R. Good, Kewanee, Ill., assignor to Allied Products Corporation, Chicago, Ill.

Filed Aug. 1, 1984, Ser. No. 636,488
Int. Cl.[4] A01B *61/04*
U.S. Cl. 172—266 **3 Claims**



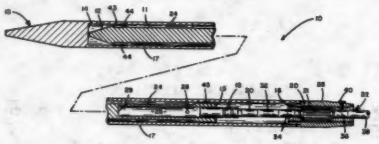
1. An earthworking tool support mechanism comprising a frame member, support means including an upper support member fixedly attached to the upper side of said frame member, a lower support member fixedly attached to the lower side of said frame member, flange means pivotally connected to said lower support member, a toggle link mechanism supported by said support means, said toggle link mechanism including substantially straight upper and lower link members, a first pivot connection pivotally mounting said upper and lower link members together at respective first portions thereof, a second pivot connection pivotally mounting a second portion of said upper link member to said upper support member, a third pivot connection pivotally mounting a second portion of said lower link member to said flange means, said first pivot connection being located at an intermediate position between said second and third pivot connections and being spaced from a plane passing through the axes of said second and third pivot connections when said substantially straight upper and lower link members are linearly aligned thereby defining an off-centered first pivot connection relative to said second and third pivot connections, biasing means mounted on said upper support member having one end pivotally attached to an intermediate portion of said upper link member, said biasing means normally retaining said upper and lower link members in substantially linear alignment with each other, and an earthworking tool fixedly attached to said flange means, said earthworking tool being movable between a working position wherein said upper and lower link members are in substantially linear alignment with each other and said off-centered first pivot connection is in a first position spaced from said plane through the axes of said second and third pivot connections and a non-working position wherein said upper and lower link members are angularly related to each other and said first pivot connection is in a second position further spaced from said plane, including stop means mounted on said upper and lower link members for preventing said first pivot connection from moving to and through said plane under urging of said biasing means.

4,609,052

PNEUMATICALLY OPERATED BURROWING TOOL

Stephen S. Lewin, 3530 Tuxedo Rd., Mound, Minn. 55364

Filed Nov. 29, 1984, Ser. No. 676,308
Int. Cl.[4] E21B *1/00*
U.S. Cl. 173—91 15 Claims



1. A pneumatically operated burrowing tool adapted for burrowing holes in earth, comprising

(a) a tubular housing having a reduced diameter front end cap and a rear end cap, all along a common axis, and said rear end cap having a threaded bore therethrough about said axis;

(b) a slidable piston in said tubular housing, said piston having a partial internal bore opening toward said rear end cap; and a valve port through said piston opening into said internal bore; and an enlarged diameter rear shoulder about said said piston rearward of said valve port, said enlarged diameter rear shoulder adapted for sliding contact against said tubular housing; said piston having a front end and a rear end and being slidable in said tubular housing between a maximum forward position wherein said piston front end contacts said front end cap, and a maximum rearward position wherein said piston rear end contacts said rear end cap;

(c) a hollow spool valve in said internal bore opening;

(d) a valve reversal screw having an external threaded surface in said end cap threaded bore, said screw having an axial bore therethrough; and at least one slot axially aligned between the external threaded surface of said valve reversal screw and the end cap threaded bore; said valve reversal screw being axially threadably movable between a first forward position and a second rearward position; and

(e) an air hose attached to said valve reversal screw, and an air coupling connected between said valve reversal screw and said spool valve; whereby when said valve reversal screw is in its first forward position said spool valve uncovers said valve port to cause said piston to move rearward from its maximum forward position, and when said valve reversal screw is in its second rearward position said spool valve covers said valve port to cause said piston to move forward from its maximum rearward position, all under the influence of pressurized air applied through said air hose and exhausted through said at least one slot.

4,609,053

HAMMER TOOL

Karl-Göran B. Ragnmark, Kalmar, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Sep. 15, 1983, Ser. No. 532,585
Claims priority, application Sweden, Sep. 22, 1982, 8205436
Int. Cl.[4] B25D *11/10*
U.S. Cl. 173—104 11 Claims

1. A hand held hammer tool comprising:

a drive motor (16);

a hammer mechanism (35) including a hammer piston (39), and a drive piston (38) reciprocably movable in a hammer cylinder (34) for driving said hammer piston (39) by means of an intermediate air cushion (70) towards a working tool (13) which is releasably coupled to the front end of the hammer tool, said hammer cylinder (34) having an axis (77);

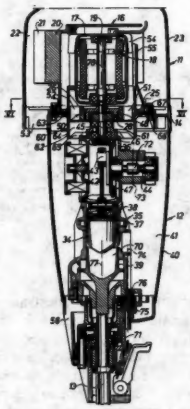
a motor section (11) including said drive motor (16), which motor section is readily interchangeable as a unit in said hammer tool, said drive motor having a shaft (19) having an axis (78) which is substantially aligned with the axis (77) of said hammer cylinder (34);

coupling means (50) including a first part (27, 81) and a second part (49);

said first part (27, 81) of said coupling means (50) being incorporated in said motor section (11) and said motor shaft (19) of said drive motor (16) being connected to said first part (27, 81) of said coupling means (50);

a hammer section (12) including said hammer mechanism (35), said hammer section further comprising a rotatably driven input drive shaft (45) substantially aligned with the axis (77) of said hammer cylinder (34), said second part (49) of said coupling means (50) connected to said input drive shaft (45) for driving thereof, bevel gears (46, 47) coupled to said input drive shaft (45) and crank means between said bevel gears (46, 47) and said drive piston of said hammer mechanism for transmitting a drive force from said rotatably driven input drive shaft (45) to said drive piston (38);

means (24) for selectively and removably connecting said



motor section (11) to said hammer section (12) such that said first and second parts of said coupling means (50) engage each other; and

a flywheel (48) in said hammer section (12), incorporating said second part (49) of said coupling means (50) and thereby being mounted on said input drive shaft (45) and constrained to remain in said hammer section (12) when said motor section (11) is disconnected from said hammer section (12), said coupling parts (27, 81; 49) being adapted to each other for providing power transmission from said drive motor (16) through said input drive shaft (45), gears (46, 47) and crank means to said hammer mechanism when said motor section (11) and hammer section (12) are connected together while at the same time driving said flywheel (48) at the same speed as said input drive shaft (45), said flywheel (48) being adapted to make more uniform, over the revolution cycle of said crank means, a rotary load on said input drive shaft when said hammer mechanism is in operation and thereby to facilitate the operation of said hammer tool with a variety of interchangeable motor sections in which different kinds of motors may be installed.

4,609,054

ANTI-NOISE IMPACT ELEMENT

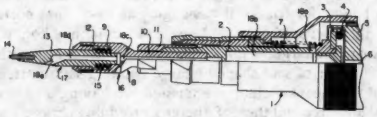
Göran Nilsson, P.O. Box 62, 829 22 Sandarne; Kjell Edström, Asbacksgatan 45, 826 00 Soderhamn, and Henry Wiklund, Backvagen 1, 820 10 Arbra, all of Sweden

PCT No. PCT/SE79/00003, § 371 Date Sep. 7, 1979, § 102(e) Date Sep. 7, 1979, PCT Pub. No. WO79/00496, PCT Pub. Date Aug. 9, 1979

PCT Filed Jan. 10, 1979, Ser. No. 187,846

Int. Cl.[4] A01B *33/00, 5/00*

U.S. Cl. 173—118 **8 Claims**



1. An impact element for an impact tool having impact actuating means, said impact element adapted to reduce the noise generated by said impact tool, said impact element comprising:

a driving mass linearly movable relative to said impact actuating means by a propelling force applied thereto,

a striking mass positioned ahead of said driving mass and linearly movable relative to said impact actuating means,

spring means disposed between said driving mass and said striking mass for allowing limited relative linear movement between said driving mass and said striking mass,

said driving mass, said striking mass, and said spring means being linearly movable, as a whole, relative to said impact actuating means,

said driving mass being adapted to exert a force on said striking mass through said spring means when said driving mass is propelled toward a workpiece, said spring means acting on the rear portion of said striking mass,

said driving mass being at least twice the weight of said striking mass,

said spring means being sufficiently stiff, relative to the weights of said driving and striking masses, so that upon impact between said striking mass and a workpiece, energy is transmitted from said driving mass to said striking mass through said spring means during the phase in which maximum force of impact between said striking mass and said workpiece is attained,

whereby the pulse of impact of the striking mass against the workpiece is elongated and damped to decrease the noise level resultant from the impact of said striking mass against said workpiece.

4,609,055

VIBRATING PLATE

Lars M. Grafström, Trelleborg; Lennart Hallstedt, Lyckeby, and Per Enochsson, Karlskrona, all of Sweden, assignors to Dynapac Maskin AB, Solna, Sweden

PCT No. PCT/SE84/00205, § 371 Date Nov. 15, 1984, § 102(e) Date Nov. 15, 1984, PCT Pub. No. WO84/04791, PCT Pub. Date Dec. 6, 1984

PCT Filed May 30, 1984, Ser. No. 681,991

Claims priority, application Sweden, Jun. 1, 1983, 8303080; Nov. 22, 1983, 8306439; Nov. 22, 1983, 8306440

Int. Cl.[4] F16F *15/08;* E02D *3/046*

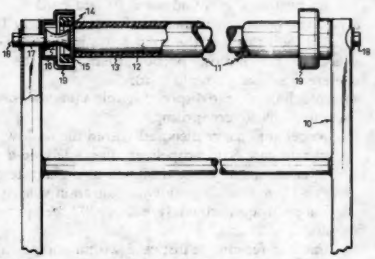
U.S. Cl. 173—162 H **7 Claims**

1. In a vibratory machine including a vibration source, an elongated handle and an elongated shaft means for mechanically coupling said source and said handle to one another, the improvement comprising:

at least one resilient means formed as an hourglass-shaped body of revolution about an axis, and disposed coaxially with respect to said handle for coupling the latter transversely to the axis of said shaft means;

means for limiting axial deflection of said resilient means due to application of forces in any direction transversely across said handle;

said resilient means having a spring stiffness and said handle having a mass, both selected so that the relationship between the frequency (F_s) of said source and the characteristic frequencies (F_c) of said handle with respect to translational and rotational motions along and about the axis of said handle, and respectively along and about two other directions both normal to said axis and to one another is such that $F_s > \sqrt{2}\,F_c$.



4,609,056

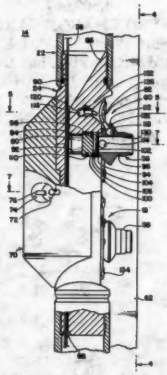
SIDEWALL CORE GUN

Edward A. Colle, Jr., Houston; Donald N. Yates, Jr., Katy, both of Tex., and Emmet F. Brieger, Nogal, N. Mex., assignors to Halliburton Company, Duncan, Okla.

Filed Dec. 1, 1983, Ser. No. 556,881

Int. Cl.[4] E21B *49/02*

U.S. Cl. 175—4 **6 Claims**



1. An apparatus for taking core samples from the sidewall of a borehole in a well, said apparatus comprising:

a string of drill pipe;

at least one gun housing connected to the downhole end of said drill string;

at least one coring bullet radially disposed within said gun housing, said coring bullet arranged for securing formation samples from the sidewall of said borehole;

a charge assembly for propelling said coring bullet toward the sidewall, said charge assembly comprising:

a detonatable cord having a diameter substantially in the range of approximately 0.125 to 0.150 inches extending generally axially through said housing from the uphole to the downhole end thereof;

at least one cartridge assembly disposed within said housing between said cord and said bullet, said cartridge assembly including a pyrotechnic charge for propelling said bullet, said cartridge assembly comprising:

a case having a substantially solid portion and a substantially hollow portion, said case being oriented with the solid portion thereof adjacent to said cord;

a passage having a diameter of approximately 0.065 to 0.070 inch through the solid portion of said case connecting the hollow portion thereof to the exterior thereof adjacent to said cord;

a pyrotechnic charge disposed within said case, said pyrotechnic charge comprising:

a propellant charge disposed within the hollow portion of said case, said propellant charge having a mixture of components being designed to deflagrate on ignition thereof having a low deflagration velocity in the range of approximately 650 to 700 feet per second; and

a first transfer charge disposed within said passage, said first transfer charge being arranged to burn on ignition thereof having a burn velocity of approximately 3,000 to 4,500 feet per second and thereby transfer ignition through the passage of said case to the hollow portion of said case; and

means for enclosing said charge within said case; and means for igniting said cord; and

a cable connecting said coring bullet to said housing, whereby said bullet may be retrieved from the sidewall.

4,609,057

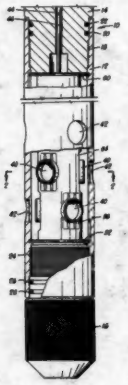
SHAPED CHARGE CARRIER

Jerry L. Walker, Fort Worth; Donald L. Crummett, Joshua, both of Tex., and William C. Behling, Duncan, Okla., assignors to Jet Research Center, Inc., Arlington, Tex. and Halliburton Company, Duncan, Okla.

Filed Jun. 26, 1985, Ser. No. 749,953

Int. Cl.[4] E21B *43/117*

U.S. Cl. 175—4.6 **23 Claims**



1. A shaped charge carrier apparatus for disposition in an elongated housing of a perforating gun, comprising:

a generally cylindrical thin wall carrier tube;

said carrier tube having a plurality of flat areas defined by said thin wall; and

each of said flat areas having an opening disposed therethrough for receiving a shaped charge therein.

21. A shaped charge carrier assembly apparatus for use in a perforating gun, comprising:

at least one shaped charge including an outer case having an outer surface and a first shoulder extending radially outward from said outer surface;

a carrier having an opening therethrough large enough to receive said outer surface of said case, and having resilient tab means integral with said carrier extending into said opening for frictionally engaging at least a first portion of said outer surface of said case and for thereby holding said shaped charge in place relative to said carrier with said shoulder of said shaped charge abutting said carrier; and

said tab means including a tapered tab having a root wider than a free end thereof, thereby providing a more resilient tab than would be provided by a rectangular tab having a free end of the same width as said free end of said tapered tab.

4,609,058

COMBINATORIAL WEIGHING METHOD AND APPARATUS THEREFOR

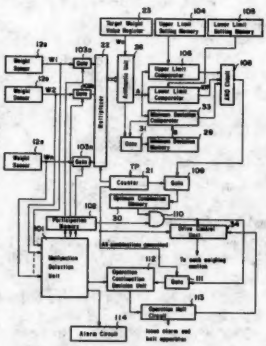
Takashi Sashiki, Nagaokakyo, and Keiko Sakaeda, Kyoto, both of Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Sep. 20, 1983, Ser. No. 533,975

Claims priority, application Japan, Sep. 20, 1982, 57-163698

Int. Cl.[4] G01G *19/00, 19/22, 19/52, 13/00*

U.S. Cl. 177—1 **5 Claims**



1. A combinatorial weighing method of a combinatorial weighing apparatus for executing a combinatorial computation on the basis of weight data obtained from a plurality of weighing machines and for selecting an optimum combination wieght value in accordance with the combinatorial computation, comprising the steps of:

(a) comparing respective weight data, obtained from a plurality of weighing machines, with a predetermined range weight data;

(b) automatically suspending the operation of the weighing machines having weight data which fall outside the range of weight data, while automatically maintaining the remaining weighing machines, excluding the suspended weighing machines, in operation; and

(c) suspending the operation of the combinatorial weighing apparatus when the number of suspended weighing machines reaches a predetermined number.

4,609,059

WEIGHING DEVICE WITH LOAD SENSING OF TRAVELING BALANCES

Klaas Pasterkamp, Huizen, Netherlands, assignor to Administratie - en Automatisergscentrum Vulcaan B.V., Netherlands

Continuation of Ser. No. 543,937, Oct. 20, 1983. This application Oct. 17, 1985, Ser. No. 788,082

Claims priority, application Netherlands, Nov. 2, 1982, 8204250; Oct. 6, 1983, 8303429

Int. Cl.[4] G01G *19/52, 3/14;* **A01K** *43/08;* **B07C** *5/28*

U.S. Cl. 177—50 **6 Claims**

1. Weighing device comprising a plurality of moving balances which travel one after the other along a fixed path of travel and each of which includes a movable member adapted to take a position that is dependent on the load weight on the balance, said device including a first region in which objects to be weighed are fed to the balances and a second region in which the movable members of said balances come to rest in their final load weighing position, and a detector means disposed at a fixed location along said path of travel for indicating the final load weighing position of the balances in digital form, said balances each including a magnetic part which is movable with the movable member of the associated balance, and said detector means comprising a magnetostrictive distance measuring system comprising electrical current pulse source, an electrical conductor, to which electrical pulses from said source are applied, a magnetostrictive member for generating a mechanical pulse at a location corresponding to the final load weighing location of the movable magnetic part of the balance, and receiver means for receiving a said mechanical pulse and for producing a signal indicating the final load weighing position of said balance dependent upon the time required for the mechanical pulse to travel from the location at which the mechanical pulse was generated to said receiver means.

4,609,060

Patent Not Issued For This Number

4,609,061

ENCLOSED SYSTEM FOR WEIGHING

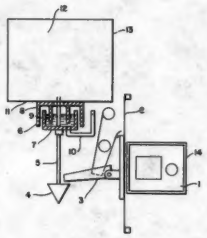
Birger Jacobsson, Karlavägen 6, S-691 41 Karlskoga, Sweden

Filed Apr. 12, 1985, Ser. No. 722,328

Claims priority, application Sweden, Apr. 16, 1984, 8402099

Int. Cl.[4] G01G *21/02, 21/28*

U.S. Cl. 177—180 **8 Claims**



1. In a dustproof weighing apparatus comprising:

(a) a vibrator operated dosing means for dispensing a material to be weighed;

(b) a receiver for holding the dispensed material while it is being weighed;

(c) a balance encased in an enclosure for determining the weight of the material; and

(d) means for transmitting a force between said receiver and said balance, said means passing through the enclosure of said balance;

the improvement wherein said means comprises an oil lock placed at the point said means passes through said enclosure, said oil lock comprising a first upright cup means containing oil, a tube passing into said first cup means for determining oil level and adding oil, and a second inverted cup means including inner and outer substantially concentric cups, the wall of said inner cup being at least partially submerged in said oil,

whereby vapors and dust cannot pass into said enclosure, and whereby the safety is increased in weighing flammable or explosive substances.

4,609,062

HEAVY-DUTY INDUSTRIAL WEIGHING SCALE

John D. Hale, East Ryegate, Vt., and Herbert L. Stott, Meridian, Miss., assignors to Colt Industries Operating Corp., New York, N.Y.

Filed Jul. 19, 1985, Ser. No. 756,823

Int. Cl.[4] G01G *21/08;* **F16C** *11/00*

U.S. Cl. 177—256 **10 Claims**

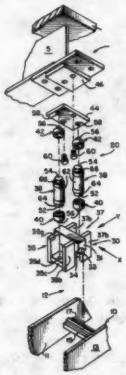
1. A heavy-duty industrial weighing scale of the type utilizing a lever assembly to transfer a load from a weighing platform to a weight indicator and a suspension assembly for interconnecting a platform load-transmitting beam to a lever of the lever assembly, wherein said suspension assembly comprises:

(A) a saddle member having one of a knife-edge and a bearing block of a pivot means for connecting the suspension assembly with said lever, the other of the knife-edge and bearing block of the pivot means being mounted to the lever;

(B) pairs of socket means, one pair being carried by the

saddle member and one pair being carried by the platform load-transmitting beam; and

(C) load-transmitting rocker pins disposed parallel to each other with a first end of each pin being loosely received in a respective socket means on the saddle member and an



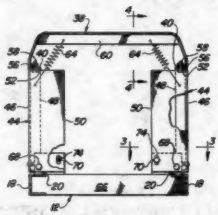
opposite end of each pin being loosely received in a respective socket means of the load-transmitting beam in a manner enabling limited displacement of the platform load-transmitting beam relative to the lever in any horizontal direction without producing horizontal shifting of the knife-edge relative to the bearing block.

4,609,063

VEHICLE HOOD MOUNTING

Robert J. Heerdink, Bloomfield, and James L. Vogt, Ottumwa, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed May 24, 1985, Ser. No. 737,847
Int. Cl.[4] B62D *25/10*
U.S. Cl. 180—69.23 **5 Claims**



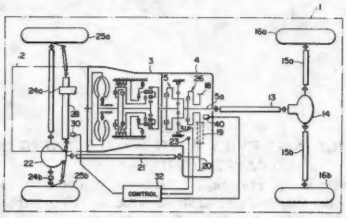
1. In a vehicle including a fore-and-aft extending main frame supporting an engine and a one-piece hood extending above and defining a top of a compartment for the engine, the improvement comprising a hood mounting assembly, comprising: a first hood support means extending between one end of the hood and said frame and rigidly supporting said one end of the hood in vertically spaced relationship to said frame; a second hood support means extending between said frame and a second end of the hood and including first connection means associated with the hood for establishing fore and aft hinge means and second connection means associated with the frame for establishing fore and aft pivot means for permitting the frame to twist about a longitudinal axis thereof without transmitting such twisting movements to the hood; and said first and second hood support means being the sole support for said hood and said hood being supported only at its one and second ends.

4,609,064

PART-TIME FOUR-WHEEL DRIVE SYSTEM WITH STEERING ANGLE RESPONSIVE CONTROL

Kunihiko Suzuki, Sagamihara, and Koji Enomoto, Ebina, both of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Apr. 16, 1984, Ser. No. 601,023
Claims priority, application Japan, May 24, 1983, 58-90991
Int. Cl.[4] B60K *17/34*
U.S. Cl. 180—233 **11 Claims**



1. A four-wheel drive vehicle comprising:

an engine

a pair of first wheels and a pair of second wheels,

a drive system capable of transmitting torque from said engine to said first wheels and said second wheels, said drive system comprising changeover means for changing said drive system from a four-wheel drive mode to a two-wheel drive mode and vice versa, said changeover means comprising a clutch; and

a control system comprising:

means for sensing a steering angle of at least one steerable wheel of the vehicle,

condition sensing means for detecting whether said drive system is in the four-wheel drive mode or the two-wheel drive mode,

means for sensing the speed of the vehicle, and

control means connected with said steering angle sensing means and said condition sensing means, for controlling said changeover means in accordance with signals of said steering angle sensing means and said condition sensing means, said control means being arranged to command said changeover means to change the condition of said drive system from the four-wheel drive mode to the two-wheel drive mode if the sensed steering angle is equal to or larger than a predetermined angle and at the same time said drive system is is the four-wheel drive mode, said control means being further connected with said speed sensing means and arranged to command said changeover means to change said drive system from the four-wheel drive mode to the two-wheel drive mode only when the sensed vehicle speed is equal to or lower than a predetermined speed.

4,609,065

WHEEL DRIVE STRUCTURE FOR AGRICULTURAL TRACTOR

Hajime Shikiya, Kishiwada; Hiroyuki Miki, Sakai; Yasuo Nakata, Sakai; Kazuo Hirata, Sakai, and Seiichi Ishiizumi, Sakai, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

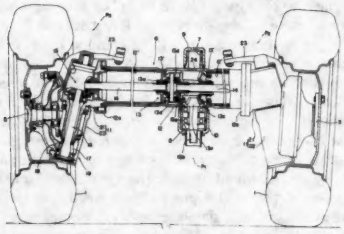
Filed Jan. 16, 1985, Ser. No. 691,772
Claims priority, application Japan, Jan. 21, 1984, 59-9145
Int. Cl.[4] B60K *17/30*
U.S. Cl. 180—261 **9 Claims**

1. A wheel drive structure for an agricultural tractor comprising:

drive case means extended transversely of said tractor for

supporting right and left wheels, said drive case means comprising a first case member and a pair of second case members connected to opposite ends of said first case member;

said first case member being formed of a length of structural steel pipe and housing a differential means in an intermediate portion thereof and a pair of differential output shafts extending in opposite directions from said differential means;



said differential means including a driving gear operatively connected to a differential input shaft and a differential gear case fixedly secured to said driving gear, said driving gear and said differential gear case having a substantially same outer diameter;

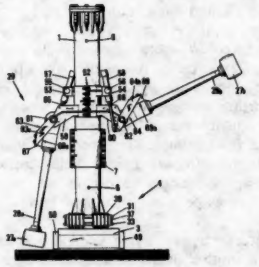
said second case members each housing reduction means, said reduction means operatively connected to one of said differential output shafts from said differential means for driving one of said wheels, said reduction means having a greater reduction ratio than an average reduction ratio of said differential means.

4,609,066

MIXED DEVICE FOR GENERATING LONGITUDINAL OR SHEAR WAVES

Pierre-Claude Layotte, Les Mathes; Jean Laurent, Orgeval, and André James, Royan, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison and Compagnie Generale de Geophysique, Massy, both of, France

Continuation of Ser. No. 378,457, May 14, 1982, abandoned.
This application Jun. 21, 1985, Ser. No. 747,392
Claims priority, application France, May 14, 1981, 81 09813
Int. Cl.[4] G01V *1/04*
U.S. Cl. 181—121 **15 Claims**



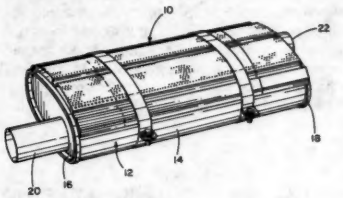
1. A unitary device for generating separately in the ground at a same site, but at different times, exclusively longitudinal acoustic waves and exclusively transverse acoustic waves by applying thereto impact forces oriented along a direction perpendicular to the ground surface for the longitudinal acoustic waves and along a direction parallel to the ground surface for transverse acoustic waves; the device including a first striking mass for falling toward the ground, an elongate guide member for guiding the fall of said first striking mass in a direction substantially perpendicular to the surface of the ground, at least one second striking mass secured to the end of a supporting arm adapted for pivoting about an axis of rotation which is substantially parallel to the ground surface, driving means for hoisting the second striking mass by pivoting the supporting arm about the axis of rotation, and a unitary impact receiving means having a coupling surface extending perpendicular to the elongate driving member for coupling with the ground to transmit to the ground the impact force of the first and the second striking masses, said impact receiving means including a first impact surface striking mass and at least one second impact surface extending perpendicular to the coupling surface for impact by the second striking mass, said device further including direction coupling means connecting the impact receiving means to the guide member for directly applying the impacts of the first striking mass to said first impact surface and for damping the transmission to said guide member of impacts on said second impact surface, and means on said guide member for mounting the axis of rotation of the arm supporting the second striking mass.

4,609,067

HEAT SHIELD FOR A VEHICULAR MUFFLER

Charles J. Gonwa, Palos Hills, Ill., assignor to Maremont Corporation, Carol Stream, Ill.

Filed May 8, 1985, Ser. No. 732,243
Int. Cl.[4] F01N *7/00*
U.S. Cl. 181—211 **2 Claims**



1. In a vehicular muffler having a body, opposed end caps affixed to the body, a longitudinal extent between the end caps defining a longitudinal direction, and a transverse extent perpendicular to the end caps, the improvement of a muffler heat shield comprising:

a pair of substantially identical shield members each having (a) a plurality of transversely spaced, transversely cupped and longitudinally extending, imperforate ribs which each have a longitudinally extending muffler body contacting portion being in contact with the muffler body substantially throughout the longitudinal extent of the ribs and which each have longitudinally extending raised portions along the muffler body contacting portions being raised away from the muffler body, and (b) a plurality of raised, perforated panels being joined to and joining the raised portions of the ribs and being raised away from the muffler body, and (c) a pair of opposed, transversely outward, longitudinally extending imperforate flanges;

the pair of shield members being placed one upon another to extend from end cap to end cap of the muffler; and

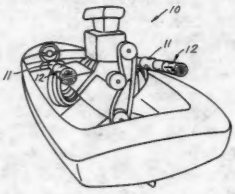
a plurality of straps encircling the muffler body and the pair of shield members transversely, the straps holding the pair of shield members securely to the muffler body.

4,609,068

EXHAUST ACCESSORY UNIT FOR INTERNAL COMBUSTION ENGINES

Drew Backlund, 1621 E. 27th, Spokane, Wash. 99203

Filed Jul. 29, 1985, Ser. No. 760,352
Int. Cl.[4] F01N *1/08*
U.S. Cl. 181—226 17 Claims



1. An exhaust accessory unit adapted to be mounted to the exhaust header of an internal combustion engine for reducing exhaust noise levels and improving low speed engine performance, comprising:

a tubular housing formed about a central longitudinal axis, said housing having an open inner end adapted to be coaxially mounted to an exhaust outlet of an internal combustion engine and an open outer end;

a rigid perforated butterfly plate pivotally mounted across the housing about a transverse axis radially offset from said central longitudinal axis; and

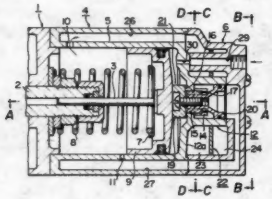
yieldable means mounted between the housing and perforated plate yieldably biasing the plate to a transverse position extending across said tubular housing for allowing the plate to progressively pivot between the transverse position and an open position substantially parallel with the longitudinal axis in response to the pressure of exhaust gases passing through said axial exhaust passageway such that when the engine is operating at high speed, the plate is situated in the open position, permitting free passage of exhaust gases through said housing and such that when the engine is operating at progressively lower speeds, the plate progressively moves to the transverse position, restricting exhaust flow through the housing, and abating noise emitted therefrom.

4,609,069

SILENCER FOR A PNEUMATICALLY DRIVEN HYDRAULIC JACK

Shigetoshi Konagai, Shizuoka, Japan, assignor to Yasui Sangyo, Ltd., Fujinomiya, Japan

Filed Jan. 2, 1985, Ser. No. 688,344
Claims priority, application Japan, Aug. 14, 1984, 59-169794
Int. Cl.[4] F01N *1/08*
U.S. Cl. 181—230 3 Claims



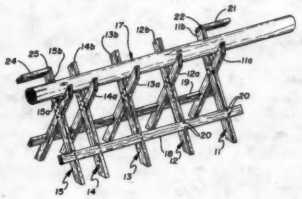
1. A silencer, for a pneumatically driven hydraulic jack equipped with a hydraulic pump having a plunger adapted to be reciprocated by an air motor of which a main piston, contained within a main cylinder of the air motor is reciprocated by the repetition of a working cycle of moving the main piston for a working travel beyond a limiting port formed at a appropriate position in the main cylinder by supplying compressed air into the main cylinder from behind the main piston, opening a valve provided on a rear wall of the main cylinder by part of the compressed air supplied into the main cylinder and escaping through the limiting port to exhaust the main cylinder, and moving the main piston for a return travel with a spring provided within the main cylinder as far as the valve is close, comprising a first low-pressure chamber formed contiguously to the rear wall of the main cylinder, a second low-pressure chamber formed contiguously to and behind the first low-pressure chamber, a baffleplate partitioning the first and second low-pressure chambers, a secondary cylinder, located behind the main cylinder, having a pair of discharge holes formed diametrically opposite to each other and radially extending to the first low-pressure chamber to discharge the high-pressure air from the main cylinder, two groups of first holes formed at an angular displacement of 90 degrees from the discharge holes respectively in the baffleplate, and two groups of second holes formed at an angular displacement of 90 degrees from the groups of the first holes in the rear wall of the second low-pressure chamber.

4,609,070

FIREWOOD CUTTING SUPPORT

Thomas A. Porps, 501 Indian Point Rd., Twin Lakes, Wis. 53181, and James A. Augustyn, 612 Virginia St., Antigo, Wis. 54409

Filed Jun. 4, 1984, Ser. No. 616,590
Int. Cl.[4] B27B *21/00*
U.S. Cl. 182—18 8 Claims



1. A firewood cutting support for cutting a piece of firewood stock into pieces of desired length by starting at one end of said firewood stock and sequentially cutting firewood pieces from said one end until the final cut is made comprising:

at least three cross braces each including a pair of brace elements secured to one another at a point between their ends to form a crossed configuration having a v-notch for supporting a piece of firewood stock, said cross braces being equally spaced from one another along their centerlines a first distance approximately equal to the desired length of the firewood pieces being cut, said first distance being approximately sixteen inches, the spacing of said cross braces permitting the saw kerf to open as cuts are made;

an end cross brace including a pair of brace elements secured to one another at a point between their ends to form a crossed configuration having a V-notch for supporting a piece of firewood stock, said end cross brace being spaced from an end one of said cross braces along their centerlines by a second distance no greater than three-fourths and no less than one-third of the desired length of the firewood pieces being cut, said second distance being no greater than about twelve inches and no less than about six inches, the spacing between said end brace and said one cross brace permitting the final cut to be made approximately midway between said end brace and said one cross

brace and further permitting the saw kerf to open as said final cut is made; and

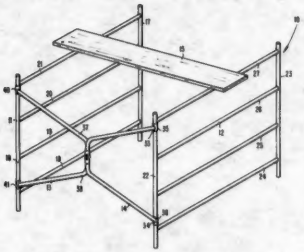
connection means for retaining said plurality of cross braces and said end cross brace in the above spaced relationship, whereby when a piece of firewood stock is placed on the cutting support and said stock is sequentially cut starting with the end opposite said end brace, with each such cut being made to the side of the center point between each pair of cross braces opposite said end brace and with the final cut being made approximately midway between said end brace and the cross brace to which it is adjacent, the weight of each firewood piece being cut will tend to open the saw kerf as such cut is made.

4,609,071

COLLAPSIBLE SCAFFOLD

Paul M. Edwards, Indianapolis, Ind., assignor to Perry Manufacturing Incorporated, Indianapolis, Ind.

Filed Feb. 7, 1985, Ser. No. 699,356
Int. Cl.[4] E04G *1/34*
U.S. Cl. 182—152 **2 Claims**



1. An assembly to support a person comprising:

a first ladder including a pair of vertical posts and a plurality of horizontal steps interconnecting said vertical posts;

a second ladder including a pair of vertical posts and a plurality of horizontal steps interconnecting said posts of said second ladder;

a flat board shaped member positionable atop one of said steps of said first ladder and atop one of said steps of said second ladder and providing a supporting surface to support a person thereatop;

a first tubular frame including a pair of aligned sleeve shaped proximal ends pivotally mounted to the top and bottom of said first ladder, said tubular frame also including a vertical extending first tubular distal end with said tubular frame converging from said proximal ends to said distal end;

a second tubular frame including a second pair of aligned sleeve shaped proximal ends pivotally mounted to the top and bottom of said second ladder, said second tubular frame also including a vertical extending second tubular distal end positioned adjacent said first tubular distal end with said second tubular frame converging from said second pair of proximal ends to said second tubular distal end;

locking means including a projection and associated window with projection engageable stop surface to connect together said distal end of said first tubular frame and said second tubular frame and operable to allow said first tubular frame and said second tubular frame to pivot through a maximum angle of approximately ninety degrees from against respectively said first ladder and said second ladder to an erected position wherein said first tubular frame and said second tubular frame extend outwardly from each ladder and space said first ladder apart from said second ladder; and wherein,

said locking means includes a sleeve mounted to but adjacent said second tubular distal end with said first tubular distal end extending through said sleeve and being pivotal therein, said sleeve includes a window formed thereon opening outwardly defining a stop surface, said first tubular distal end includes a projection fixedly mounted thereon positioned within said window and contacting said stop surface when said first tubular frame and said second tubular frame pivot ninety degrees away from said first ladder and said second ladder; and wherein:

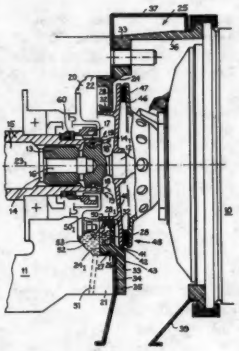
said projection includes a main body with a pair of spaced apart legs extending at least partially around said first distal end and being fixedly attached thereto, said main body further includes a cross member joining said legs integrally together with said cross member including a radially extending portion positioned in said window and limiting relative motion between said first distal end and and said second distal end.

4,609,072

CONNECTING DEVICE BETWEEN A LUBRICATED MOTOR AND A ROTATING ELECTRIC MACHINE

Jacques Attane, Issy les Moulineaux, France, assignor to Auxilec, Colombes, France

Filed Apr. 29, 1985, Ser. No. 728,418
Claims priority, application France, Feb. 28, 1985, 85 02968
Int. Cl.[4] F01M *11/00*
U.S. Cl. 184—6.11 **4 Claims**



1. A connecting device between an electric rotating machine and a lubricated device of the speed-reducer or multiplier type comprising, integral with an output shaft of the electric machine, a rotating screen opposed to the propagation towards the electric machine, of eventual leaks of lubricant in the vicinity of the shaft of the lubricated device, closing, on one side, a cavity at the end of a casing of the lubricated device, this cavity presenting, on its lower portion, an outlet hole for discharging the lubricant leaks, wherein the screen has a projection directed towards the inside of the cavity and disposed so as to deviate towards the outlet hole the particles of lubricant that escape from the lubricated device, the projection being a cylindrical wall having the same axis as the shaft of the electric machine, and wherein the electric machine includes a clip attached to the lubricated device which terminates by a nose-piece end penetrating the cavity, to this nose is attached, towards the inside of the cavity, a wall presenting an opening, the edge of which is separated by a small distance, for example, about 0.8 mm, from the periphery of the cylindrical wall projecting from the rotating screen.

4,609,073

PROGRESSIVE DISTRIBUTOR FOR LUBRICANTS

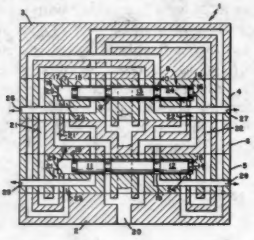
Horst Knaebel, Friedenstr. 10a, D-4005 Meerbusch 1, Fed. Rep. of Germany

Filed Apr. 22, 1985, Ser. No. 725,948

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1984, 3416041

Int. Cl.[4] F16N *27/00*

U.S. Cl. 184—7.4 18 Claims



1. A progressive distributor for lubricants comprising metering chambers;

at least two successively connected piston bore elements;

a piston for each piston bore element, which can be slid between two end positions and which piston is provided with control grooves, where the piston subdivides the piston bore element into two outer metering chambers and at least one intermediate control chamber;

two separate channels forming a feed channel and a discharge channel connected to each metering chamber of a corresponding piston bore element, each channel passing through a corresponding intermediate control chamber of the other bore;

a control edge formed in a wall of a piston associated with the other bore for interrupting the feed channel and the discharge channel at the corresponding intermediate control chamber based on the motion of the piston such that the several channels connecting the piston bore elements result in a successive shifting of the pistons thereby transporting lubricant from a metering chamber via a control chamber to a discharge port.

4,609,074

MULTIPLE OILER ASSEMBLY

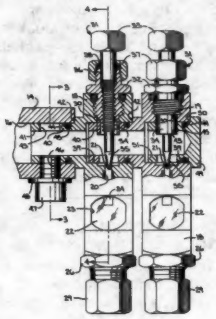
Richard E. Berrend, New Holstein, Wis., assignor to Oil-Rite Corporation, Manitowoc, Wis.

Continuation of Ser. No. 630,981, Jul. 16, 1984, abandoned. This application Jun. 24, 1985, Ser. No. 747,678

Int. Cl.[4] F16N *7/10*

U.S. Cl. 184—81 3 Claims

1. In an oiler assembly for the delivery of oil lubricant from supply means to a plurality of lubrication points, a valve member corresponding to each lubrication point, each valve member having a laterally extending first bore that opens to one side of the member, a sleeve on each said valve member projecting laterally from the side of the valve member opposite from the opening of said first bore, said sleeve providing a second bore that opens to the remote end of the sleeve and extends generally coaxially with said first bore and communicates therewith to form a transverse oil lubricant through-passage in each said valve member, each said valve member having a valved passage communicating with said through-passage to provide each lubrication point with the oil lubricant, said sleeve of each valve member having an outside diameter generally corresponding to the diameter of the first bore such that the sleeve of each valve member can be sealingly plugged into the first bore of the next preceding valve member to form a gang mounted valve member arrangement, and a needle assembly on each valve member and including a needle member for controlling the flow of oil lubricant through the corresponding valved passage, said needle assembly extending generally normal to and being interlocked with the sleeve of the



next succeeding valve member to thereby prevent involuntary separation separation between the adjacent valve members.

4,609,075

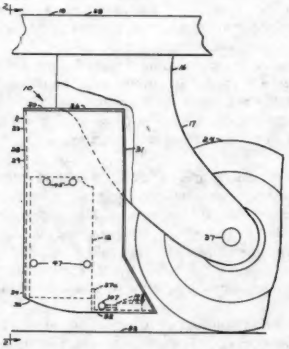
SHOPPING CART DISABLING DEVICE

Nelson W. Snedeker, P.O. Box 2010, Sparks, Nev. 89431

Filed Jun. 11, 1980, Ser. No. 158,600

Int. Cl.[4] B60T *1/14*

U.S. Cl. 188—5 6 Claims



1. A shopping cart disabling device comprising means forming a piston chamber, pressurized fluid containing means arranged to discharge its pressurized fluid contents into the piston chamber, means arranged to cooperate with the containing means and being automatically actuatable to release its pressurized fluid contents therefrom, and piston means located in the chamber and being movable to an extended position by the release of pressurized fluid from the containing means.

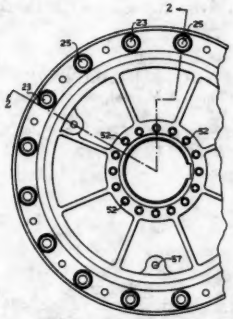
4,609,076
SPRING ENGAGED FLUID RELEASED MULTI-DISC BRAKE ASSEMBLY

Marcus H. Collins, Akron, and Robert P. Petkash, Fairview Park, both of Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 528,485, Sep. 1, 1983, abandoned. This application Aug. 12, 1985, Ser. No. 764,974

Int. Cl.[4] F16D *55/38, 55/40*

U.S. Cl. 188—71.5 **7 Claims**



1. A spring-engaged, pressure-fluid disengaged disc brake assembly comprising a shaft adapted to be fixed to a rotating component of a mechanism, a plurality of rotor discs axially movably mounted on said shaft and rotatable with said shaft, a plurality of stator discs interleaved with said rotor discs, friction discs interposed between said rotor and stator discs, means supporting said stator discs for limited movement axially of said shaft, spring means for biasing all of said stator and rotor discs axially into engagement with each other in a direction away from one end of said assembly, non-rotatable stop means other than said stator and rotor discs, adapted to contact only one intermediate stator disc radially outwardly of said friction discs to prevent movement of said one intermediate disc axially toward said one end of said assembly, first power means for compressing said spring means to release all of said rotor and stator discs from engagement with each other, second power means for moving the rotor and stator discs on one side of said stop means into engagement with each other and said one intermediate disc while said first power means compresses said spring means, and means for controlling said second power means to apply a modulated force to said rotor and stator discs while said first power means compresses said spring means, to thereby apply slip-braking torque to said shaft.

4,609,077
INTEGRAL-TYPE DISK BRAKE

Youichi Nakatsuhara, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 31, 1984, Ser. No. 646,154

Claims priority, application Japan, Sep. 29, 1983, 58-151013[U]

Int. Cl.[4] F16D *65/38, 65/40*

U.S. Cl. 188—73.38 **3 Claims**

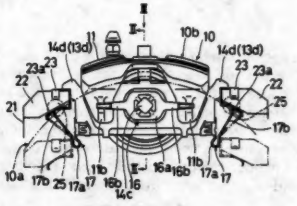
1. An integral-type disk brake comprising:

a caliper assembly which further comprises a caliper body, an inner pad held to a piston via a spring member within the caliper body, and an outer pad held opposite to the inner pad and kept at a certain distance from the inner pad via a spring member;

a pair of arms circumferentially spaced a certain distance from each other along the outer periphery of a disk rotor mounted on a support, the caliper assembly being disposed between the arms so as to extend over the outer periphery of the disk rotor;

a pair of protrusions extending radially outwardly from opposite ends of metal back plates attached to the inner and outer pads, the opposite ends being at the side of the outer periphery of the disk rotor, the protrusions being in engagement with the arms on the support, and the caliper assembly being held to the support in such a way that it can slide axially of the disk rotor; and

a pair of spring members mounted at opposite ends of the metal back plate attached to the outer pad, the opposite ends being at the side of the axis of the disk rotor, the spring members extending toward the outer periphery of the disk rotor and being capable of being circumferentially deflected toward and away from each other, front ends of the pair of spring members being in resilient contact with bottom surfaces of the arms which are at the side of the axis of the disk rotor wherein the bottom surfaces of the



arms with which the front ends of the pair of spring members are in resilient contact incline circumferentially outwardly as said bottom surfaces move toward the axis of the rotor each of the pair of spring members further comprise leaf spring means which include a U-shaped mounting portion, a bent portion formed like a loop, a flat plate portion extending from the front end of the bent portion in such a way that a front end thereof engages with a respective one of the inclined surfaces of the arms, the mounting portion having a pair of fingers which resiliently grip the side ends of the metal back plate attached to the outer pad on axially opposite sides of the disk rotor, the bent portion extending from the side end of the mounting portion which is at the side of the axis of the disk rotor and to which the fingers of the mounting portion are attached and wherein the bent portions of the spring members are spaced apart a distance less than the distance between the arms such that said caliper assembly is insertable between said pair of arms in a radially inward direction.

4,609,078
SPRING ENTRAPMENT OF SPLIT WEDGE FLOATATION DEVICE

Lloyd G. Bach, South Bend, and James J. Colpaert, Granger, both of Ind., assignors to Allied Corporation, Morristown, N.J.

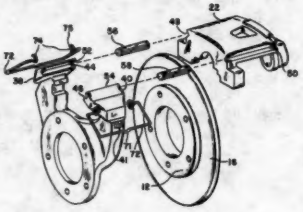
Continuation of Ser. No. 556,651, Nov. 30, 1983, abandoned. This application Dec. 3, 1985, Ser. No. 804,234

Int. Cl.[4] F16D *65/00*

U.S. Cl. 188—73.43 **9 Claims**

1. A disc brake, comprising a rotor having friction faces on opposite sides thereof, a caliper cooperating with a pair of friction elements to urge the elements into engagement with the friction faces of the rotor to retard rotation of said rotor, a non-rotating torque member carrying said caliper in a substantially fixed circumferential position relative to said torque member, said caliper and torque member having at least a pair of axially extending recesses in registry with one another and the recesses cooperating to define an axially extending aperture between said caliper and torque member, elongated pin members slidably received in said axially extending aperture for

movably supporting said caliper relative to said torque member and for normally positioning said caliper in a predetermined circumferential position relative to said torque member, the pin members slidably engaging each other at a surface of each pin members and each pin member having a transverse dimension, and a dual purpose resilient spring engaging and maintaining each pin member within the axially extending aperture, said spring having enlarged end members disposed



within the aperture and each presenting a flat surface engaging a respective pin member to bias the respective pin member inwardly of said axially extending aperture, the enlarged end members having a transverse measurement no greater than said transverse dimension, and said enlarged end members disposed within the aperture so as to maintain the cicumferentail position of the caliper relative to the torque member if said pin members fail to effect said circumferential position.

4,609,079

SLIDING CALIPER DISC BRAKE

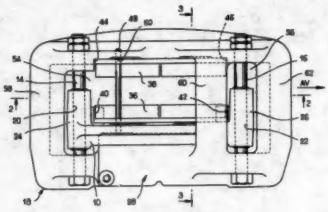
Jean-Claude Méry, Pavillons sous Bois, France, assignor to Societe Anonyme D.B.A., Paris, France

Continuation of Ser. No. 571,753, Jan. 17, 1984, abandoned. This application Aug. 19, 1985, Ser. No. 767,651

Claims priority, application France, Jan. 20, 1983, 83 00845

Int. Cl.[4] F16D *65/14*

U.S. Cl. 188—73.45 **5 Claims**



1. A disc brake having a caliper mounted for sliding by means of two axial pins on a fixed support, operating means being associated with the caliper in order to urge directly a first friction element against a first face of the disc and, by reaction through the caliper, to urge a second friction element against the other face of the disc, the pins being fastened to the caliper and passing through slide guide bores formed in support arms of the fixed support which extend axially beyond the periphery of the disc to define a front support arm and a rear support arm, characterized in that said caliper includes two asymetrical through openings bounded by inboard and outboard caliper portions and by only two side arms and a single middle arm extending over the disc to join together the inboard and outboard caliper portions, a first of said two through openings receiving therein and exposing said rear support arm and associated pin and permitting radial extraction of the friction elements therethrough because the first through opening is defined by a perimeter uninterrupted by any caliper structure extending therethrough, and a second of said two through openings receiving therein and exposing said front support arm and the corresponding pin, the through openings separated by the single middle arm that extends radially above the friction pads and closely adjacent one of the side arms at the perimeter of said second through opening in order to increase the rigidity of the one side arm, the second through opening dimensioned to receive without interference only the front support arm of the fixed support, and the friction elements having curved edges to enable the friction elements to be tilted and removed at an acute angle relative to the caliper, the curved edge of each friction element comprising a rounded edge about which said friction element pivots during extraction thereof.

4,609,080

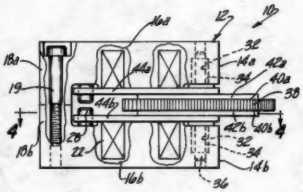
SPRING ENGAGED DOUBLE CALIPER DISC BRAKE

Thomas C. Sekella, Elmira, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Mar. 5, 1984, Ser. No. 586,309

Int. Cl.[4] F16D *65/21*

U.S. Cl. 188—171 **13 Claims**



1. A brake device for engaging two opposing flat surfaces of a rotating disc such as to decelerate said rotating disc, said brake device comprising:

frame means disposed in a fixed position relative to said rotating disc, said frame means comprising:

a first frame portion disposed adjacent a first flat surface of said two opposing flat surfaces and spaced a predetermined distance away therefrom, said first frame portion of said frame means comprising a first flat magnet body, said first flat magnet body being disposed parallel to said first flat surface, said first flat magnet body further comprising a first bridge portion disposed remote from said first flat surface;

a second frame portion disposed adjacent a second flat surface of said two opposing flat surfaces, said second frame portion being spaced a predetermined distance away from said second flat surface, said second frame portion of said frame means comprising a second flat magnet body, said second flat magnet body being disposed parallel to said second flat surface, said second flat magnet body having a second bridge portion disposed remote from said second flat surface; and

interconnection means interconnecting said first and second frame portions of said frame means, said interconnection means comprising a fastener fixedly interconnecting said first and second bridge portions;

first brake means interposed said first frame portion of said frame means and said first flat surface, said first brake means comprising:

first electromagnet means fixedly interconnected with said first frame portion of said frame means;

first armature means interposed said first electromagnet means and said first flat surface, said first armature means being movably interconnected with said first frame portion of said frame means, such as to be movable towards and away from said first flat surface of said rotating disc, said first electromagnet means being selectively operable to bias said first armature means away from said first flat surface;

first spring means mechanically interposed said first frame

portion of said frame means and said first armature means, said first spring means exerting a biasing force therebetween to bias said first armature means towards said first flat surface when said first electromagnet means is not selectively operated; and

first brake lining means interposed said first armature means and said first flat surface such that when said first electromagnetic means is not energized said first brake lining means decelerates said rotating disc when said first armature means is biased by said first spring means towards said first flat surface; and

second brake means interposed said second frame portion of said frame means and said second flat surface of said rotating disc, said second brake means comprising:

second electromagnet means fixedly interconnected with said second frame portion of said frame means;

second armature means interposed said second electromagnet means and said second flat surface, said second armature means being movably interconnected with said second frame portion of said frame means, such as to be movable towards and away from said second flat surface of said rotating disc, said second electromagnet means being selectively operable to bias said second armature means away from said second flat surface;

second spring means mechanically interposed said second frame portion of said frame means and said second armature means, said second spring means exerting a biasing force therebetween to bias said second armature means towards said second flat surface when said second electromagnet means is not selectively operated;

second brake lining means interposed said second armature means and said second flat surface such that said second brake lining means decelerates said rotating disc when said second armature means is biased by said second spring means towards said second flat surface;

at least one bore extending normally into said first flat magnet body;

first guide pin means fitted partially into said at least one bore and extending therefrom in a direction towards said first flat surface, said first guide pin means movably interconnecting said first armature means with said first electromagnet means;

at least one clearance aperture formed in said first armature means, said first guide pin means guiding said first armature means freely through said at least one clearance aperture in said first armature means as said first armature means moves towards and away from said first frame portion upon energization and de-energization of said first electromagnet means;

at least one bore extending normally into said second magnet body;

second guide pin means fitted partially into said at least one bore and extending therefrom in a direction towards said second flat surface, said second guide pin means movably interconnecting said second armature means with said second electromagnet means; and

at least one clearance aperture formed in said second armature means, said second guide pin means guiding said second armature means freely through said at least one clearance aperture in said second armature means as said second armature means moves towards and away from said second frame portion upon energization and de-energization of said second electromagnet means.

4,609,081

HYDRAULIC SNUBBER

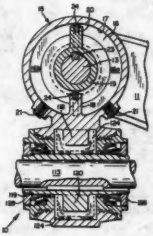
Emory D. Hungerford, Milwaukie, Oreg., assignor to Esco Corporation, Portland, Oreg.

Filed Jul. 12, 1984, Ser. No. 630,516

Int. Cl.[4] F16F *9/14*

U.S. Cl. 188—307 **1 Claim**

1. In a hydraulic snubber, a cylinder having a rotor axially disposed therein, said rotor being adapted to rotate relative to said cylinder, a first radially extending vane in said cylinder and a second radially extending vane on said rotor, means coupling the said rotor and cylinder between elements as to which the relative rotation is to be damped, each vane being equipped with a resilient extension for adjustably limiting the flow of fluid therepast and equally in both directions of rotation from one side of said vane to the other, each extension being equipped with at least two orifices communicting one side of its associated vane with the other, each orifice being equipped with a pocket, with the pockets in a given extension being located adjacent opposite sides of their associated extension.



4,609,082

DOUBLE-TUBE VIBRATION DAMPER UNIT

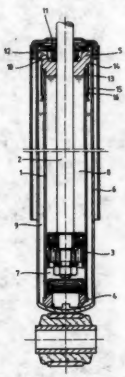
Hermann Itzinger, Dittelbrunn, and Werner Christel, Hambach, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Jun. 20, 1984, Ser. No. 622,535

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1983, 3322366

Int. Cl.[4] F16F *9/40*

U.S. Cl. 188—315 **16 Claims**



1. In a vibration damper unit such as for vehicles comprising a cylinder member (1) having an axis and two ends, namely a first end and a second end and being provided with a bottom valve unit (4) adjacent said second end and a piston rod guiding and sealing unit (5) adjacent said first end, a cavity (7, 8) being defined within said cylinder member (1) axially between said bottom valve unit (4) and said piston rod guiding and sealing unit (5), said first end of said cylinder member (1) having a terminal edge (13) engaging an engagement face (14) supported by said piston rod guiding and sealing unit (5), said terminal edge (13) and said engagement face (14) being substantially

located within a plane of engagement perpendicular to said axis;

a piston rod member (2) extending through said guiding and sealing unit (5) along said axis and being axially movable with respect to said cylinder member (1);

a piston unit (3) fastened to said piston rod member (2) within said cavity (7, 8) and dividing said cavity into two working chambers (7, 8) namely a first working chamber (8) adjacent said piston rod guiding and sealing unit (5) and a second working chamber (7) adjacent said bottom valve unit (4), said working chambers (7, 8) being interconnected for fluid exchange by throttled piston passage means extending across said piston unit (3);

a container member (6) surrounding said cylinder member (1) and having a first end adjacent said first end of said cylinder member (1) and a second end adjacent said second end of said cylinder member, said container member (6) being closed adacent said second end by an end wall and adjacent said first end by said piston rod guiding and sealing unit (5), an annular space (9) being defined between said cylinder member (1) and said container member (6), said annular space (9) being interconnected with said second working chamber (7) for fluid exchange through throttled bottom passage means extending across said bottom valve unit (4);

body damping liquid within said cavity (7, 8);

a body of damping liquid and a body of gas within said annular space (9);

an annular cover member (15) being provided radially between said cylinder member (1) and said container member (6) and extending in axial direction across said plane of engagement;

said annular cover member (15) being fixed by one end thereof to said piston rod guiding and sealing unit (5) and having a free end;

an annular interspace (16) being defined between said annular cover member (15) and said cylinder member (1);

said cover member (15) being constricted (at 17) near the free end thereof such as to form a circumferentially continuous annular gap (19) of reduced radial width as compared with the radial width of said annular interspace (16);

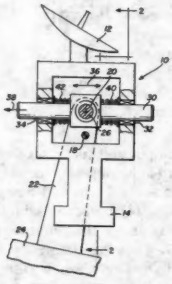
said plane of engagement being located axially between said one end and said free end.

4,609,083

REACTIVE ATTITUDE STABILIZATION SYSTEM

William B. Stuhler, 1908 Edgewater Dr., Plano, Collin County, Tex. 75075

Filed Mar. 31, 1983, Ser. No. 480,834
Int. Cl.[4] H01Q 1/18; F16F 7/10
U.S. Cl. 188—378 **7 Claims**



1. A reactive attitude stabilization apparatus for use with a moving vehicle, comprising:

a platform to be stabilized having a center of gravity;

a first shaft pivotally mounted on the vehicle and defining a first axis which is normally horizontal;

a second shaft supported by said first shaft and defining a second normally horizontal axis which intersects said first axis at a point located vertically above said center of gravity of said platform in the absence of acceleration forces;

slide bearing means for mounting said platform on said second shaft, said slide bearing means enabling vehicle acceleration forces to induce a translation of said platform along said second axis, thus displacing said center of gravity to obtain a torque about said first axis due to gravitational force to counteract a torque about said first axis due to acceleration force, thereby stabilizing said platform; and

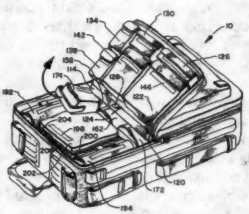
resilient means for opposing translation of said platform in either direction along said second axis to define an equilibrium position wherein said platform center of gravity is located vertically below said intersection of said first and second horizontal axes.

4,609,084

TRAVEL PACK

Frank O. Thomas, 5167 S. 600 East, Murray, Utah 84107

Continuation-in-part of Ser. No. 428,103, Sep. 29, 1982, Pat. No. 4,513,866. This application Apr. 29, 1985, Ser. No. 728,250
The portion of the term of this patent subsequent to Apr. 30, 2002, has been disclaimed.
Int. Cl.[4] A45C 11/00
U.S. Cl. 190—110 **27 Claims**



1. A travel pack comprising:

a body having a generally planar back with a plurality of sides extending upwardly from the peripheral edges of said back;

lid means forming a front on the back, said lid means being attached along a portion of one end thereof to at least one of the sides of the body, and the lid means being configured so as to provide a plurality of operable positions, each permitting user access to substantially all materials contained within the pack;

a connecting means for detachably securing the lid means along its remaining edges to the sides of the pack; and

at least one drawer pocket means located in the pack, each of said drawer pocket means securing a pouch within the pack, each drawer pocket means being formed as a receptacle for the respective pouch with at least one side of each drawer pocket means being capable of being opened such that the pouch is removable from the drawer pocket means, the pouch having a handle mounted to one end thereof for use in removing the pouch from the drawer pocket means, the pouch providing storage such that the items stored in the pouch are accessible by opening the drawer pocket means when the pouch remains within the pack, at least one of the drawer pocket means attached to the body having an opening substantially adjacent to the foldable position of the lid means so as to permit user access into that drawer pocket means when the lid means is in the partially open position, all of the drawer pockets means being oriented in the same direction within the

pack when the pack is completely closed such that the contents of all of the drawer pocket means are accessible when the pack is in either the fully open or the partially open position.

4,609,085

MULTIPLE CLUTCH COVER ASSEMBLY

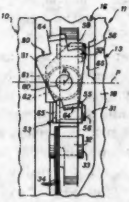
Pierre Renaud, Le Plessis-Trevise, France, assignor to Valeo, Paris, France

Filed May 12, 1983, Ser. No. 493,816

Claims priority, application France, May 14, 1982, 82 08424

Int. Cl.[4] F16D *13/69, 13/70*

U.S. Cl. 192—70.23 **14 Claims**



1. A multiple clutch cover assembly, said clutch cover assembly having an axis and comprising a cover defining a housing and adapted to be mounted on a reaction plate or flywheel, two axially spaced annular pressure plates including an intermediate pressure plate and a terminal pressure plate, an inner clutch disc disposed axially between said intermediate and terminal pressure plates, an outer clutch disc to be disposed axially between said terminal pressure plate and said reaction plate or flywheel, resilient engagement means bearing against said cover and constantly urging said pressure plates away from said cover, and disengagement means for urging said pressure plates individually toward said cover, said terminal pressure plate having a travel limiting lever rockably mounted about an axis of rotation disposed at right angles to said axis of the cover assembly, said travel limiting lever having two camming surfaces, one of said camming surfaces being selectively engageable with said reaction plate or flywheel when said cover assembly is in its engaged position and the other of said camming surfaces being selectively engageable with said cover when said cover assembly is in its disengaged position, said travel limiting lever having resiliently preloaded friction means operative perpendicularly to said axis of rotation for impeding angular movement of said travel limiting lever, both of said camming surfaces being disposed on the same side of a plane containing said axis of rotation and being substantially parallel to said axis of said cover assembly.

4,609,086

FRICTION CLUTCH

Manfred Vogel, Kappelrodeck, Fed. Rep. of Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

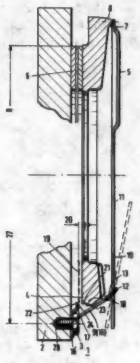
Filed Sep. 14, 1984, Ser. No. 651,395

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1983, 3333181

Int. Cl.[4] F16D *13/71, 13/40*

U.S. Cl. 192—70.27 **34 Claims**

1. A friction clutch, particularly for use in motor vehicles, comprising a pressure plate; a counterpressure plate; a diaphragm spring including an annular main section, fingers extending substantially radially inwardly of said section, and prongs extending outwardly from said section; and means for separably securing said prongs to said counterpressure plate with said pressure plate disposed between said diaphragm spring and said counterpressure plate, said prongs and said pressure plate comprising means for holding said prongs in radially stressed condition subsequent to separation of said



prongs from or prior to attachment of said prongs to said counterpressure plate.

4,609,087

MOTOR VEHICLE TRANSMISSION HAVING CLUTCH OPERATING HYDRAULIC CYLINDER

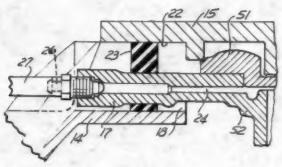
Graham J. Shirley, Troy, Mich., assignor to Automotive Products plc, Warwickshire, England

Filed Feb. 24, 1983, Ser. No. 469,284

Claims priority, application United Kingdom, May 28, 1982, 8215789

Int. Cl.[4] F16D *25/08, 25/12*

U.S. Cl. 192—85 CA **6 Claims**



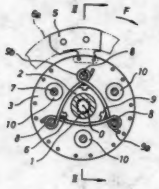
1. In a motor vehicle transmission comprising a clutch, a gearbox assembly having an input shaft driven by the clutch, a bell housing enveloping the clutch and having a face thereon, a gearbox casing housing the gearbox and having a face thereon, whereby the bell housing and the gearbox casing are assembled with the bell housing face and the gearbox casing face in mutual engagement, and an annular hydraulic slave cylinder concentric with the gearbox input shaft and operable to release the clutch to break drive to the input shaft, said slave cylinder comprising an outer tubular body and an inner tubular body disposed concentric to and spaced apart from the outer tubular body, the improvement comprising the slave cylinder having a radially and outwardly projecting portion formed integrally with the outer tubular member of the slave cylinder, a passageway for hydraulic fluid being fed from a master cylinder into the slave cylinder disposed in said radially and outwardly projecting portion, a conduit having an end connected to said passageway and another end to the master cylinder, and means holding said radially and outwardly projecting portion sandwiched between opposed surfaces on the faces of said bell housing and said gearbox casing.

4,609,088

DRY CLUTCH DISC

Hiroshi Takeuchi, Higashiosaka, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Nov. 21, 1983, Ser. No. 554,029
Claims priority, application Japan, Jun. 8, 1982, 57-185747
Int. Cl.[4] F16D *3/12, 13/64*
U.S. Cl. 192—106.1 7 Claims



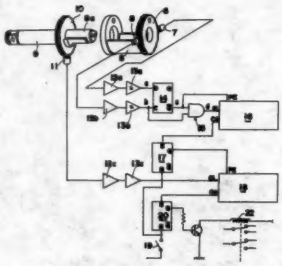
1. A dry clutch disc comprising a radially outwardly extending outward cam formed on an output-side spline hub, input-side side plates disposed on both sides of the cam, a leaf spring facing on a cam surface and elastically radially outwardly deformable by means of the cam being equipped between the input-side side plates, and a stopper means made of elastic material adjacent the leaf spring for elastically stopping outward radial travel of the leaf spring at the time of its radial outward deformation, said stopper means being provided on the side plates with a fixed distance kept apart from the leaf spring radially outwardly.

4,609,089

IMPACT WRENCH FOR TIGHTENING TO A DESIRED LEVEL

Takashi Kobayashi, Habikinoshi, and Masaru Mizuhara, Kashiharashi, both of Japan, assignors to Kabushiki Kaisha Kuken, Osaka, Japan

Filed Dec. 27, 1982, Ser. No. 453,003
Int. Cl.[4] B23Q *5/06;* F16D *43/20*
U.S. Cl. 192—138 3 Claims



1. An impact wrench, comprising:

casing,

rotating means situated inside a casing and adapted to be driven by driving means,

means to be rotated by said rotating means, said means to be rotated being integrally situated on the clutch body and having teeth equally arranged on an outer periphery of the clutch body as first machine-readable indicia,

clutch means rotationally situated in the casing, said clutch means including said clutch body, and a hammer pivotally connected to the clutch body, said hammer being engaged with the rotating means so that when the rotating means is operated, the clutch means is rotated,

an anvil rotationally situated in the casing and having a circular member with second machine-readable indicia on an outer portion thereof, said anvil being continuously enganged with the hammer for continuous rotation of the anvil by means of the hammer in the absence of substantial external force acting against rotation of the anvil and said anvil being intermittently engaged with the hammer for intermittent rotation of the anvil by means of the hammer in the presence of substantial external force acting against rotation of the anvil,

first sensing means situated in the casing adjacent to the first machine-readable indicia to detect rebounding angle of the means having first machine-readable indicia, said means having first machine-readable indicia rebounding when rotation of the anvil by striking by the hammer is greatly resisted by said external force, said first sensing means comprising at least one first sensor adjacent to the first machine-readable indicia, a first circuit connected to the first sensor to detect and count rebounding angle of the means having first machine-readable indicia, and a first preset counter comparing the rebounding angle of the means having first machine-readable indicia and the predetermined rebounding angle, said first preset counter emitting a signal only when the rebounding angle of the means having first machine-readable indicia exceeds the predetermined rebounding angle,

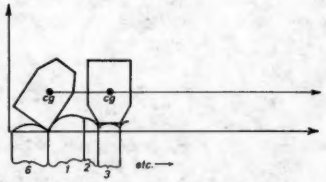
second sensing means situated in the casing adjacent to the second machine-readable indicia of the circular member to detect angular displacement of the anvil, said second sensing means being actuated by means of the first sensing means after the first sensing means detects a predetermined rebounding angle, said second sensing means comprising a second sensor adjacent to the second machine-readable indicia of the circular member, a second preset counter comparing angular displacement of the anvil and the predetermined angular displacement, and a second circuit connected to the second preset counter, said second circuit operating to stop the driving means when said second preset counter emits a signal indicating that angular displacement of the anvil exceeds the predetermined angular displacement.

4,609,090

METHOD AND APPARATUS FOR MOVING AND HANDLING HEAVY OBJECTS

George V. McIlvaine, 10301 Barnsdale Dr., Boise, Id. 83704; Thompson A. Baker, 2335 Springwood, Meridian, Id. 83642, and Walter U. Uebelacker, 11088 Edna, Boise, Id. 83704

Filed Nov. 18, 1982, Ser. No. 441,933
Int. Cl.[4] B65G *47/24, 11/00*
U.S. Cl. 193—47 11 Claims



1. A method for supporting a rolling workpiece having a rigid contour and a center of gravity comprising the steps of:

contouring a non-planar ramp to correspond to the locus of points described by the contour of the workpiece which instantaneously lie vertically below the center of gravity as the workpiece rolls in a direction orthogonal to an axis through the center of gravity without any change in the elevation of said axis and;

providing friction means so as to prevent slippage at all points at which the workpiece contacts the ramp whereby

the ramp surface provides continuous rolling support for the entire transit of said workpiece.

4,609,091

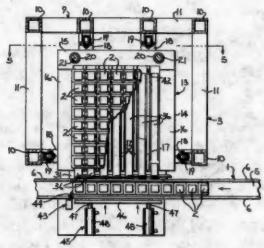
STORAGE UNIT FOR A CONVEYOR SYSTEM

Wolfgang C. Dorner, Oconomowoc, Wis., assignor to Dorner Mfg. Corp., Hartland, Wis.

Continuation-in-part of Ser. No. 406,368, Aug. 9, 1982, abandoned. This application Nov. 8, 1984, Ser. No. 669,625

Int. Cl.[4] B65G *1/00*

U.S. Cl. 198—347 **20 Claims**



1. A conveying system having a storage unit for storing articles, comprising a main conveyor to convey a plurality of articles, a support structure disposed laterally of main conveyor and including a plurality of spaced parallel support members, a plurality of spaced parallel secondary conveyors, each secondary conveyor supported on one of said support members, said secondary conveyors extending laterally of the main conveyor with one end of each secondary conveyor being disposed adjacent a side of the main conveyor, a storage assembly disposed adjacent said main conveyor and having a plurality of generally parallel lifting members disposed to move within spaces between adjacent secondary conveyors, first drive means for moving said lifting members vertically relative to said main conveyor, transfer means for transferring a row of articles disposed in end-to-end relation on said main conveyor laterally onto the respective secondary conveyors, second drive means for operating said secondary conveyors in unison to move said row of articles laterally of said first conveyor, and stop means positioned at the end of each secondary conveyor to stop movement of said row of articles on said secondary conveyors, said articles having a greater dimension than the width of said secondary conveyors, whereby opposed ends of said articles project beyond the sides of the respective secondary conveyors, upward vertical movement of said lifting members within said spaces engaging said projecting ends of the articles to lift the articles upwardly from said secondary conveyors to a storage location, said lifting members being constructed and arranged to prevent lateral movement between each of the articles in said row as the articles are moved upwardly.

17. A method of conveying articles, comprising the steps of conveying a plurality of articles on a main conveyor, stopping a train of articles in end-to-end relation on said main conveyor, transferring said train of articles laterally in unison to a plurality of spaced parallel secondary conveyors disposed laterally of said main conveyor and overhanging opposed ends of each article beyond the corresponding sides of the respective secondary conveyors, operating said secondary conveyors in a first direction to move said train in said first direction, engaging said train with stop means to position the train at a given location spaced laterally from said main conveyor while continuing operation of said secondary conveyors, stopping a second train of articles on said main conveyor, transferring said second train laterally to said secondary conveyors while operating said secondary conveyors to thereby move said second train laterally on said secondary conveyors into engagement with said first train, moving a plurality of parallel members upwardly within the spaces between adjacent secondary conveyors to simultaneously lift said trains from said secondary conveyors and elevate said trains to a storage location, lowering said members to a level beneath said secondary conveyors to redeposit said trains on said secondary conveyors, operating said secondary conveyors in a second direction toward said main conveyor to sequentially return each train to said main conveyor, momentarily operating said secondary conveyors in said first direction after said first train has been returned to said main conveyor to release engagement between said first and second trains, operating said main conveyor to convey each train as it is received on said main conveyor to a desired location, and thereafter operating said secondary conveyors in said second direction after said first train has been conveyed away on said main conveyor to return said second train to said main conveyor.

4,609,092

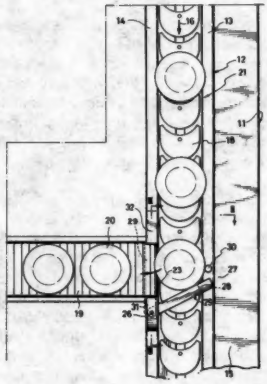
CIRCULATIVE CATERING TABLE

Hitoshi Takai, Matsuto, Japan, assignor to Ishino Seisakujo Co., Ltd., Matsuto, Japan

Filed Feb. 29, 1984, Ser. No. 584,914

Int. Cl.[4] B65G *47/53*

U.S. Cl. 198—367 **1 Claim**



1. A circulative catering table apparatus comprising a main endless crescent conveyor means forming an endless path along which dishes and meals are circulated, and inner and outer guide frames disposed along the sides of said endless path for guiding the dishes and meals along said endless path during the circulation thereof, characterized by the combination comprising: inlet and outlet means formed in opposed portions of said inner guide frame and have a width so that the dishes and meals can pass through said inlet and outlet; bypass conveyor means provided between said inlet and outlet means for circulating the dishes and meals through said bypass conveyor; first and second arm member means provided in said inlet and outlet means, repsectively; said first arm member means being movable between an inoperative position where it closes said inlet and an operative position where it extends over said path to guide dishes and meals from said main conveyor means to said bypasss conveyor means; said second arm member means being movable between an inoperative position where it closes said outlet and an operative position where it extends over said path to guide dishes and meals from said bypass conveyor means to said main conveyor means; and pin member means **(30)** with a rotatable roll provided at said outer guide frame in the vicinity of said first arm member means, which is put at its operative position, whereby the dishes and meals are pre-

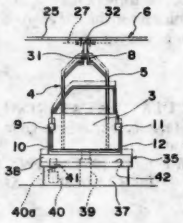
vented from running on the outer guide frame when they abut upon said first arm member means in its operative position.

4,609,093

HANGER CONVEYANCE IN AUTOMOBILE ASSEMBLY LINE

Toshinobu Taketani, Higashihiroshima; Minoru Ota, Kure; Masafumi Kobayashi, and Kazuo Kato, both of Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jun. 28, 1985, Ser. No. 751,980
Int. Cl.[4] B65G *17/32*
U.S. Cl. 198—378 **4 Claims**



2. A system for circulating at least one hanger for the transport of left-hand and right-hand automobile door assemblies from and back to a loading site through a door fitting station and then through an unloading site, which system comprises:

an overhead conveyance track extending from and back to the loading site through the door fitting station and then through the unloading site and having at least one trolley movable along the track and extending downwardly therefrom;

the hanger having first and second door supports for the support of the left-hand and right-hand door assemblies generally in parallel relation to each other, respectively, and adapted to be removably suspended from the trolley, the door assemblies being mounted on the first and second door supports successively at the loading site after having been removed from an automobile body structure;

a first turntable assembly arranged at the door fitting station for turning through 180° about a vertical axis the hanger which has been moved thereto along the track from the loading site with the left-hand and right-hand door assemblies confronting first and second directions opposite to each other, respectively, said left-hand and right-hand door assemblies being, after the hanger has been turned 180° by the first turntable assembly, rendered to confront the second and first directions, respectively; and

a second turntable assembly arranged at the door fitting station on the downstream side of the first turntable assembly with respect to the direction of transport of the hanger towards the unloading site for again turning the hanger through 180° about a vertical axis to render the left-hand and right-hand door assemblies to confront the first and second directions, respectively.

4,609,094

APPARATUS FOR SORTING CYLINDRICAL WORK PIECES HAVING A LONGITUDINAL FLAT ACCORDING TO THEIR ROTATIONAL ORIENTATION

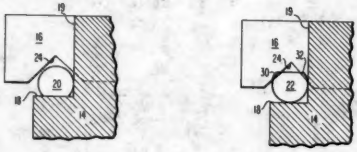
Rudolph H. Hedel, West Windsor Township, Mercer County, and William A. Dischert, Springfield Township, Burlington County, N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Nov. 1, 1984, Ser. No. 667,160
Int. Cl.[4] B65G *47/24*
U.S. Cl. 198—380 **1 Claim**

1. An apparatus for sorting cylindrical work pieces having an axial flat along the length thereof and selecting the ones lying on said flat, the said appartus comprising:

a flat vibratory track for longitudinally moving said cylindrical pieces in the direction of their longitudinal axes and for rotating said pieces about their longitudinal axes until they come to rotational rest lying on their flats,

a gate member disposed over said track and transversely thereof,



said gate member comprising a notched plate having an inverted V-shaped notch and vertically positioned to permit only those pieces lying on their flats to pass longitudinally through the notch and to block from passage therethrough those not lying on their flats,

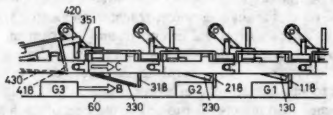
air means, in front of and adjacent to said gate member, for periodically directing a stream of air transversely of said track for removing work pieces from said track.

4,609,095

ARTICLE SPACING APPARATUS

Harald Lenherr, and Gert Deutschländer, both of Neuhausen am Rheinfall, Switzerland, assignors to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Apr. 5, 1984, Ser. No. 597,018
Claims priority, application Switzerland, Apr. 5, 1983, 1831/83
Int. Cl.[4] B65G *47/26*
U.S. Cl. 198—460 **14 Claims**



1. An apparatus for providing a uniform spacing between articles supported on and advanced by a conveyor in a conveying direction, comprising:

(a) a carrier means arranged for travel in said conveying direction parallel to said conveyor at a speed less than that of said conveyor;

(b) a plurality of spacer units mounted on said carrier means and being uniformly spaced from one another in a direction parallel to said conveying direction; each spacer unit including:

(1) a spacer gate having a working position in which said spacer gate is abutted by an article advanced by the conveyor and an idling position in which articles advanced by the conveyor pass by said spacer gate unhindered thereby;

(2) a sensor element supported upstream of said spacer gate as viewed in said conveying direction and being displaceable by an article before the article abuts said spacer gate; and

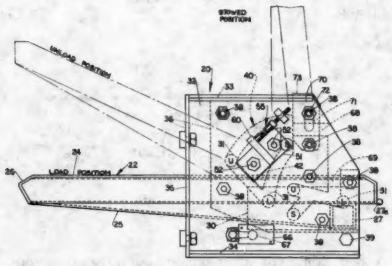
(3) actuating means operatively coupled to said sensor element and to the spacer gate which forms part of an immediately upstream located spacer unit for moving the last-named spacer gate from the idling position to the working position in response to a displacement of the sensor element by the article.

4,609,096

LOADER/UNLOADER ASSEMBLY FOR VERTICAL STORES CONVEYOR HAVING UNLOAD POSITION SAFETY CUT-OFF

Verle L. Doty, Cincinnati, Ohio, assignor to Federal Equipment Company, Cincinnati, Ohio

Filed Oct. 12, 1984, Ser. No. 660,446
Int. Cl.[4] B65G 17/34
U.S. Cl. 198—464.4 10 Claims



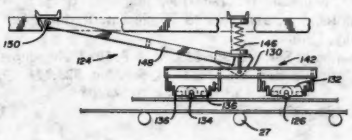
1. A loader/unloader assembly for use with a vertical conveyor system comprising a tiltable load platform, means for positioning said platform to a horizontal load position and to an inclined unloaded position, said positioning means comprising guide pin means associated with said platform and guide groove means cooperating with said guide pin means for selectively positioning the load platform in said load and unloaded positions, said guide pin means comprising first and second spaced guide pins slidingly cooperating with said guide groove means, said guide groove means being operable to permit upward pivotal movement of said load platform in the load and unloaded positions, said guide groove means comprising a first substantially closed groove portion for slidably engaging said first guide pin and a second groove portion for slidably engaging said second guide pin, said positioning means including means associated with said guide groove means for selectively positioning the load platform in a vertical stowed position, said first groove portion comprising a forward, rearwardly and downwardly inclined groove section terminating at its upper and lower ends in upwardly and rearwardly arcuate groove sections, respectively, connected by a rearward vertical groove section, said first pin being slidably engaged with said first groove portion such that it assumes a position at the juncture of said forward and upper groove sections when the load platform is in the unloaded position, a position at the juncture of said lower and rearward groove sections when the load platform is in the load position, and a position within said rearward groove section when the load platform is in the stowed position, said groove also including a second generally T-shaped groove portion having a rearwardly and downwardly inclined body groove section intersected intermediate its forward and rearward ends by a downwardly and forwardly inclined leg groove section, said second guide pin being slidably engaged with said second groove portion such that said second pin assumes a position at the forward end of said body groove section when the load platform is in the unloaded position, a position at the rearward end of said body groove section when the load platform is in the load position, and a position at the lower end of said leg groove section when the load platform is in the stowed position, means for sensing when a predetermined downward force is applied to the load platform in the unload position, means for inhibiting conveyor operation when said predetermined force is sensed, means for retaining said first pin at the juncture of said forward and upward groove sections when the load platform is in the unload position, said retaining means being displaceable to an inhibit position when said predetermined force is applied to the load platform, said inhibit means being responsive to the displacement of said retaining means to said inhibit position, means for adjustably urging said retaining means against said first pin so as to vary the force applied against the load platform necessary to displace the retaining means to the inhibit position, said retaining means comprising block means extending slightly into said first groove portion so as to displaceably hold the first pin in place when the load platform is in the unload position, and means for slidably mounting said block means for movement toward and away from said first pin, said urging means comprising spring means for urging said block means against said first pin, said inhibit means comprising switch means responsive to said block means for producing a change in the state of an electric signal when said block means is displaced to the inhibit position.

4,609,097

HIGH ANGLE CONVEYOR

Joseph A. Dos Santos, Winfield, Ala., assignor to Continental Conveyor and Equipment Company, Inc., Winfield, Ala.

Filed Aug. 17, 1983, Ser. No. 524,058
The portion of the term of this patent subsequent to Dec. 31, 2002, has been disclaimed.
Int. Cl.[4] B65G 15/14
U.S. Cl. 198—628 16 Claims



1. A high angle conveying apparatus including:

(a) a conveyor belt trained for movement in a first endless path of travel,

(b) a cover belt trained for movement in a second endless path of travel,

(c) first pressure means in association with at least one of said belts to maintain a predetermined tension in said belts,

(d) support means in association with each of said belts to support said belts in a path of travel including a material loading zone whereat said belts are out of operative proximate contact with each other and also including a material lifting zone whereat said belts are in operative proximate contact with each other whereby material on said conveyor belt will be held in contact therewith by said cover belt and also including a material discharge zone whereat said belts are moved out of operative proximate contact with each other for discharging material therefrom,

(e) additional pressure means in operative proximity with the obverse surface of said cover belt in said straight material lifting zone to apply an essentially fully equalized pressure to said cover belt, and

(f) drive means to move said cover belt and said conveyor belt through their respective paths of travel whereby material on said conveyor belt may be conveyed from said material loading zone, up a high angle through said material lifting zone and then discharged from said conveyor belts at said material discharge zone,

(g) said additional pressure means including a plurality of modules of rollers supported at spaced apart positions along said path of travel of said cover belt in said material lifting zone,

(h) each of said modules comprising a section of rollers having at least one row of rollers positioned to contact the obverse surface of said cover belt along a line transverse to the direction of movement of said cover belt with each of said rollers being mounted for rotation in a carrier, each said carrier being supported for rotation on equalizer brackets permitting conformance of each of said rollers to

the configuration of said cover belt independently of adjacent rollers,

(i) support means including a framing member and swinging arm supports for said modules pivotally mounted on said framing member at positions upstream from said modules, and

(j) resilient means to spring bias said modules of rollers into contact with the obverse surface of said cover belt for applying essentially fully equalized pressure thereto.

4,609,098

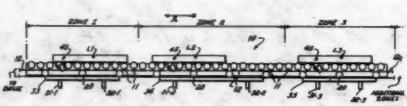
ZERO PRESSURE ACCUMULATING CONVEYOR AND MODULE

Steven J. Morgan, Jeffersonville, Ind., and Gary L. Martin, Louisville, Ky., assignors to Figgie International Inc., Willoughby, Ohio

Continuation of Ser. No. 356,213, Mar. 8, 1982, abandoned. This application Jun. 22, 1984, Ser. No. 623,371

Int. Cl.⁴ B65G *13/00, 43/08*

U.S. Cl. 198—781 **5 Claims**



1. In a belt driven live roller conveyor apparatus having load carrying rollers mounted between conveyor side rails and defining a plurality of accumulating zones, and a discharge zone, a drive belt, belt supporting tensioning rollers mounted in each zone to hold said belt in engagement with said load carrying rollers, and means for adjusting said tensioning rollers in each zone including a roller shaft in each tensioning roller, a slide plate adjacent at least one end of each support roller, said roller shaft having an end mounted in said slide plate, and a positioning bracket for each slide plate mounted on the inside of said conveyor rail and extending inwardly, and slidably supporting said slide plate with a lower portion of said slide plate extending beneath said positioning bracket, means for selectively actuating selected groups of tensioning rollers in defined accumulation and discharge zones of said conveyor to selectively engage said belt with said load carrying rollers and to disengage said belt therefrom to interrupt driving said load carrying rollers, and said actuating means comprising:

an actuator bracket mounted on said conveyor rail in each zone,

an elongated actuator rack means in each zone extending beneath the movable slide plates in the zone and engaging said lower portion of the slide plates mounting tensioning roller shafts in said zone, and

actuator means mounted on said actuator bracket in each zone and operably connected to each actuating rack means for selectively raising and lowering said rack means, said slide plates and said tensioning rollers, and thereby moving said drive belt into and out of driving engagement with the load carrying rollers of the associated accumulating zone.

4,609,099

BELT CONVEYOR ARRANGEMENT

Gerald R. O. Pentith, Sturgis, Ky., assignor to Continental Conveyor and Equipment Company, Inc., Winfield, Ala.

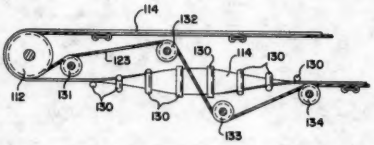
PCT No. PCT/GB84/00042, § 371 Date Aug. 13, 1984, § 102(e) Date Aug. 13, 1984, PCT Pub. No. WO84/03271, PCT Pub. Date Aug. 30, 1984

PCT Filed Feb. 16, 1984, Ser. No. 641,897

Claims priority, application United Kingdom, Feb. 18, 1983, 8304634; Dec. 8, 1983, 8332830

Int. Cl.⁴ B65G *23/14*

U.S. Cl. 198—833 **6 Claims**



1. A belt conveyor arrangement comprising an elongate frame, a roller journaled at each end of said frame, at least one of said rollers being driven, an endless belt passing around said rollers and having an upper and lower run, a plurality of rotatable members carried at spaced intervals along the frame and including upper members and lower members spaced along said upper and lower runs of said belt, a plurality of laterally spaced continuous cables running around said rollers and engaging said rotatable members for support thereby, said belt being supported directly by upper and lower runs of said cables, first inverting means for inverting the path of said lower run of said belt as it leaves one of the rollers and for leading said belt onto the lower run of said cables, first guide rolls mounted between said first inverting means and said one roller for diverting said cables upwardly from said lower run of said belt toward said upper run of said belt, said first inverting means located directly beneath said upper run of said belt and operative in said inverting process to maintain a portion of said belt in a vertical plane, and second guide rolls mounted on said frame along the path of said first inverting means for guiding said plural cables downward past said vertical plane of said belt to a horizontal plane that is beneath said lower run of said belt to support said belt in said lower run and second inverting means for inverting the path of said lower run of said belt from said cables and returning said belt below the lower run of the cables before the belt reaches said other roller.

4,609,100

CLAMPING DEVICE FOR BELTS

Harald Fudickar, Wuppertal, and Peter Thies, Ennepetal, both of Fed. Rep. of Germany, assignors to Wagener Schwelm GmbH & Co., Schwel, Fed. Rep. of Germany

Filed Jun. 25, 1984, Ser. No. 623,995

Int. Cl.⁴ B65G *35/00*

U.S. Cl. 198—854 **3 Claims**

1. A clamping device for engaging a conveyor belt with a substantially vertical clamping force generally perpendicular to the belt and with substantially horizontal belt-holding force generally in line with the belt, said clamping device comprising:

an upper crossbar and a lower crossbar disposed respectively above and below a conveyor belt;

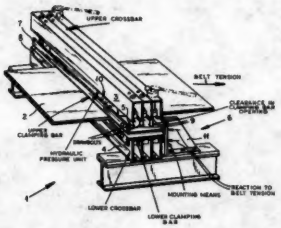
drawbolts interconnecting the ends of said crossbars;

a respective clamping bar disposed between each cross bar and said belt, said clamping bars having openings at their ends traversed by said bolts with clearance;

a hydraulic pressure unit braced between one of said clamping bars and the respective crossbar for distributing

clamping force over the length thereof and the width of said conveyor; and

mounting means for horizontally limiting movement of at least one of said clamping bars against said horizontal belt holding force, said at least one of said clamping bars vertically slidably abutting against said mounting means for



resisting said horizontal belt holding force said crossbars being each formed from at least one box-cross-section member and each of said clamping bars being formed as a respective channel-shaped member, said hydraulic pressure unit being a plurality of piston-and-cylinder units spaced apart along the length of said one of said clamping bars.

4,609,101

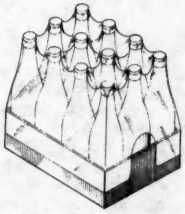
MULTI-UNIT PACKAGE

John E. Ullman, Huntingdon Valley, Pa., assignor to The Mead Corporation, Atlanta, Ga.

Division of Ser. No. 683,611, May 5, 1976, Pat. No. 4,365,456. This application Sep. 27, 1982, Ser. No. 429,981

Int. Cl.[4] B65D *65/14, 65/18*

U.S. Cl. 206—45.33 **3 Claims**



1. A multi-unit package comprising:

a paperboard tray including a bottom wall and a pair of spaced apart upstanding flexible side walls along opposite sides of the bottom wall;

a group of articles such as cans, bottles and the like on said bottom wall between said side walls; and

a flexible film sheet extending over said group of articles and overlapping both of said tray side walls, bonding sections of those portions of said film sheet overlapping said side walls bonded thereto by the substance of said bonding sections with a substantially continuous bond extending along substantially the entire length of each of said side walls, said bond having a height less than the height of said side wall and located adjacent that edge of said side wall opposite said bottom wall, an unattached portion of said film sheet left between said bond and the bottom wall, said continuous bond having been formed by pressing said bonding sections of said film sheet to be bonded against said side walls with a substantially constant pressure along the length of said side wall while simultaneously heating said bonding sections of said film sheet to bonding temperature and while maintaining said film sheet taut over said articles.

4,609,102

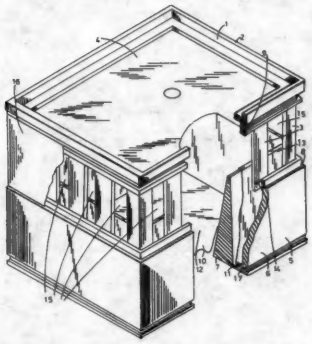
PLASTIC FILM BAG LYOPHILIZATION SYSTEM

Alvin S. Blum, 2350 Del Mar Pl., Fort Lauderdale, Fla. 33301

Filed Dec. 31, 1984, Ser. No. 687,851

Int. Cl.[4] B65D *81/18*

U.S. Cl. 206—216 **17 Claims**



1. A lyophilization system for filling a container means with a substance to be dehydrated, freeze-drying said substance while within said container means and sealing said container means so as to provide a lyophilized substance within a vacuum-sealed filmy material bag container, comprising:

A. a container means including,

a. a filmy material bottom sheet means shaped into a tray means with a generally flat bottom and elevated perimeter for containing said substance to be dehydrated, said flat bottom adapted for efficient heat transfer by direct contact with a heat transfer surface, and

b. a filmy material top sheet means of substantially flat shape for providing a cover for said tray means:

B. a base, said base including base rim means connected to said bottom sheet means peripherally for supporting said bottom sheet means peripherally and maintaining its tray shape, said base rim means having a central opening for said flat bottom to permit said flat bottom to make contact with said heat transfer surface without intervening structure;

C. a top, said top including top rim means connected peripherally to said top sheet means for supporting the shape of said cover;

D. holding and spacing means incorporated in said base and said top for holding said top by said top rim means in a fixed, open, first position above said base by said top rim means engaging said base rim means, said open, first position providing a plurality of peripheral spaces between said top sheet means and said bottom sheet means for the passage of fluid therebetween during the lyophilization process, said holding and spacing means further having compressing means for holding said top in a fixed, closed, second position against said base, thereby compressing and hermetically sealing said top sheet means to said elevated perimeter of said bottom sheet means, said holding and spacing means further providing guidance for sliding movement of said top relative to said base from said first position to said second position upon the application of closing forces between said top and said base while within an evacuated chamber after the lyophilization process has been completed; said holding and spacing means adapted for heat sealing said top sheet means to said bottom sheet means at the region where said top sheet and

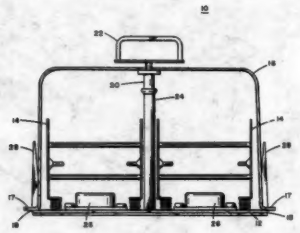
said bottom sheet means are juxtaposed in said second position, said heat sealing being performed after removal of said top and said base, in hermetically sealed second position, from said evacuated chamber.

4,609,103

SEMICONDUCTOR SLICE CASSETTE CARRIER

Thomas C. Bimer, Albuquerque, N. Mex.; Malvern L. Creps, Plano, and Edwin G. Millis, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 27, 1984, Ser. No. 644,282
Int. Cl.[4] B65D *85/00*
U.S. Cl. 206—328 **5 Claims**



1. An apparatus for carrying a semiconductor slice cassette, comprising:
- a base;
- a cover for disposal on said base to provide a sealed volume therewith;
- sealing means disposed about the periphery of said base for sealing cover onto said base;
- a cassette receiving and supporting cradle carried on said base and having non-abrasive surfaces for cooperating with the cassette to provide support therefor while minimizing particulate generation resulting from friction between the receiving and supporting means and the cassette surfaces;
- wherein said non-abrasive surfaces of said cradle are positioned to receive the cassette such that the cassette is tilted for causing semiconductor slices contained within the cassette to rest against a back portion of the cassette to prevent the slices from sliding out of the cassette;
- at least one high efficiency particle filter mounted on said base for filter air entering said sealed volume;
- latch means for latching said cover onto said base;
- at least one resilient spring positioned on said base and upon which said cradle is mounted for providing shock absorption and mechanical isolation for the cassette during transporting and handling of the carrying apparatus; and
- means on said cradle for removably engaging the cassette.

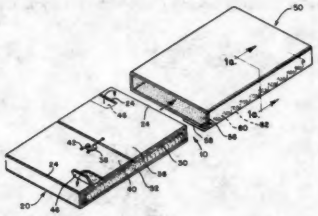
4,609,104

RFI SHIELDED, MULTIPLE PART CONTAINER AND COMPONENTS THEREOF

Kevin Kasper, Elm Grove, Wis., and Paul Nigro, Norridge, Ill., assignors to ADE, Inc., Chicago, Ill.

Filed Jun. 4, 1985, Ser. No. 741,180
Int. Cl.[4] B65D *81/14*
U.S. Cl. 206—334 **18 Claims**

1. A multiple part protective container comprising:
- a sleeve comprising a first sheet of material having a first continuous conductive layer on one side thereof, said first sheet defining two ends bonded together at a joint to form the first sheet into the sleeve, said first conductive layer extending over an inner surface of the sleeve, at least a part of one of the two ends being folded over at a fold line to bring the first conductive layer of the two ends into low resistance contact across the joint; and
- a transporter sized to slide within the sleeve, said transporter comprising a second continuous conductive layer extending over an inner surface of the transporter, said transporter defining at least one tab foldable outwardly to bring the second conductive layer into low resistance,



sliding electrical contact with the first conductive layer as the transporter is slid into the sleeve;

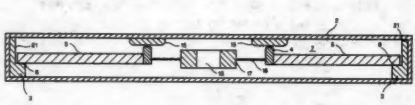
said sleeve and transporter cooperating to provide effective EMI/RFI shielding to objects within the transporter when the transporter is received within the sleeve.

4,609,105

INFORMATION RECORDING DISK CARTRIDGE PROTECTIVE STRUCTURE

Kenneth Manes; Zahirudeen Premji, and Edward White, all of Boulder County, Colo., assignors to Storage Technology Partners II, Louisville, Colo.

Filed Sep. 27, 1984, Ser. No. 655,848
Int. Cl.[4] B65D *85/00*
U.S. Cl. 206—444 **2 Claims**



1. An information recording disk protective cartridge assembly, said cartridge assembly comprising;
- a cartridge housing, said housing having a rectangular shape and having a rectangular opening on one side thereof, said cartridge housing further having a stand-off disposed on an inner surface thereof, and, also having a tapered protruding lip on the opening thereof;
- a cartridge insert tray, said cartridge insert tray being slidably disposed in the opening in the cartridge housing, said cartridge insert tray having a circular shoulder which supports a disk in the tray along the outer edge of the disk, said cartridge insert tray having a recess into which sealably mates the protruding cartridge housing lip to fully enclose the disk in the cartridge housing;
- a spacer attached to the disk, said spacer cooperating with the stand-off to prevent the disk from contacting the interior surface of the cartridge housing;
- means for preventing said cartridge insert tray from being completely removed from said cartridge housing; and
- means for locking said cartridge insert tray into said cartridge housing when said cartridge insert tray is in a closed position;
- wherein the spacer is attached to the edge of a center opening in the disk, said opening for the attachment of a flexible, disk centering assembly, said disk centering assembly in turn securely attached to the spacer, wherein the spacer is comprised of a raised ring shaped spacer which is completely attached to the edge of the disk opening, and wherein the stand-off is comprised of a pair of smooth, semi-circular shaped protrusions having a diameter sub-

stantially the same as the ring shaped spacer and extending away from the inner cartridge surface a distance such that when the disk is fully inserted into the cartridge, the stand-off protrusions cooperate with the ring shaped spacer to prevent the disk recording surface from contacting the inner surface of the cartridge housing.

4,609,106

PORTABLE JERRICAN-LIKE CONTAINER HAVING A SUITABLE-TO-BE-PALLETIZED CASING

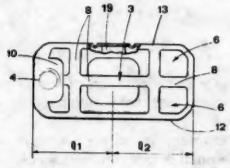
Vittorio Gentili, Via Caprarie 3, 40124 Bologna, Italy

Filed Oct. 23, 1984, Ser. No. 663,999

Claims priority, application Italy, Nov. 22, 1983, 5081/83[U]; Dec. 16, 1983, 5130/83[U]

Int. Cl.⁴ B65D *21/02, 1/02*

U.S. Cl. 206—509 **4 Claims**



1. A portable jerrican-like container having upper and lower faces, a support handle provided on at least one of the faces, an inlet/outlet opening, said container being substantially in a form of a parallelepiped in which the length is multiple of the width and the height is preferably equal to, multiple or submultiple of the width, said upper and lower faces of the casing being flat surfaces with predetermined cavities defined in one face and predetermined matching projections defined in the other face to provide mutual engagement between superimposed containers; said projections and cavities being identically repeated on each square portion of said lower and upper faces and being formed and sized to allow a number of containers to be superimposed and stacked on one another with the projections of one container protruding into the cavities of another container when said containers are at 90° and 180° to each other and said handle being a part of said projections.

4,609,107

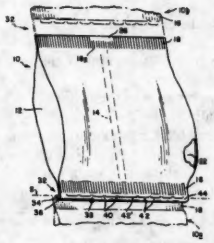
EASY OPEN AND RECLOSABLE BAG HAVING A SEPARABLE RECLOSURE TIE

Andrew McG. Martin, 3 Arlington St., Boston, Mass. 02116; Kenneth C. Meyers, West Newton, Mass., and Daniel F. Pawling, Newton, Mass., assignors to Andrew McG. Martin, Boston, Mass.

Filed Apr. 16, 1984, Ser. No. 600,419

Int. Cl.⁴ B65D *33/16*

U.S. Cl. 206—610 **27 Claims**



1. In a plastic bag of the type having opposite walls and at least one seal sealing the walls together in at least one location to form a pouch, the improvement comprising

A. a separable reclosure tie positioned adjacent to said one seal, said tie comprising

(1) relatively short integral extensions of said bag walls extending beyond said one seal,

(2) integral reinforcing means in said wall extensions which extend generally transversely along said wall extensions; and

B. a parting line extending between said one seal and said reinforcing means for separating said tie from said pouch-defining bag walls when the tie is pulled directly away from the seal at a selected location on the tie, said line being composed of a series of closely spaced collinear, substantially identical, elongaged perforations through said wall extensions, each said perforation having

(1) a transverse centerline,

(2) an end portion distal to said selected tie location whose opposite edges define an acute angle between them, and

(3) an end portion proximal to said selected tie location which intercepts said parting line at an angle so that any tear caused by said pulling is initiated at the distal end portion of a perforation and propagates to the proximal end of the next adjacent perforation along a path of least resistance which arches away from said refinforcing means whereby no nicks or cuts are created in the torn edge of the reclosure tie by the separation of the tie.

4,609,108

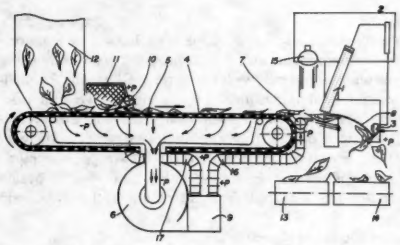
TOBACCO SORTING METHOD AND APPARATUS

Vladislav N. Hristozov, Sofia; Hristo M. Ribarov, Plovdiv; Zdravko B. Marchev, Sofia; Spas N. Markov, Plovdiv, and Atanas A. Valev, Sofia, all of Bulgaria, assignors to Institute Po Technicheska Kibernetika I Robotika, Sofia, Bulgaria

Filed Jan. 27, 1984, Ser. No. 574,705

Int. Cl.⁴ B07C *5/342*

U.S. Cl. 209—581 **2 Claims**



1. Apparatus for sorting tobacco leaves, comprising a perforated belt conveyor, means providing a zone of sub-atmospheric pressure beneath the upper run of said conveyor belt, a source of polychromatic light illuminating a zone of vision through which tobacco leaves travel in sequence, said source emitting light, which varies its intensity periodically due to supplying said source with low frequency alternating current and having green, orange, red, and infrared areas of the spectrum, and an optical sensor receiving light reflected to the sensor from the tobacco leaves, a pneumatic unit which separates in a zone of action the successive tobacco leaves which have thus been inspected by the light source and the optical sensor to divide such tobacco leaves into a satisfactory group and an unsatisfactory group, between the zone of vision of the optical sensor and the zone of action of the pneumatic unit there is a distance insuring the entering of the tobacco leaf in the zone of action of the pneumatic unit after the value of the light reflected in the infrared range has diminished to a value below the preliminary preset value, between the vision zone of the optical sensor and the zone of action of the pneumatic unit

there is disposed a flexible screen, between the discharge end of the conveyor belt and the zone of vision of the optical sensor there is disposed a first air jet which is oriented in the direction of movement of the upper run of the conveyor belt and a second jet disposed above the upper run of the conveyor belt, said second jet being oriented in a direction opposite to the upper run of the conveyor belt, the two jets being connected via a flow stabilizer to a source of super-atmospheric air pressure.

4,609,109

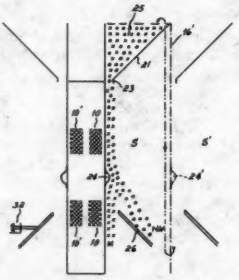
SUPERCONDUCTING MAGNETIC SEPARATORS

Jeremy A. Good, London, England, assignor to Cryogenic Consultants Limited, London, England

Continuation-in-part of Ser. No. 395,224, Jul. 6, 1982, abandoned. This application Sep. 19, 1985, Ser. No. 777,623

Int. Cl.[4] B07C *5/344*

U.S. Cl. 209—636 **6 Claims**



1. In a magnetic separator of the type having at least one superconducting magnet coil in an evacuated cryostat housing which presents a generally vertical outer wall, means for feeding a stream containing magnetically responsive and non-responsive particles adjacent said wall, the magnetically responsive particles of said stream being drawn closer to the wall by magnetic action of said coil than the non-responsive particles, and a splitter for separating a fraction of said stream which is closer to said wall from a fraction farther from said wall,

the improvement wherein,

said each coil is in a generally vertical plane and has approximately straight horizontal upper and lower portions which are joined by ends,

said outer wall is generally parallel to and closely adjacent said coil and tends to flex inwardly between said upper and lower portions when said housing is evacuated,

insulation is provided between said coil and said outer wall,

a vertical coil-confining member extends within the housing from below the lower portion to above the upper portion of the coil to hold said portions against vertical displacement by electromagnetic repulsion force acting on them in operation,

transverse support means within the housing and engaging said wall between the upper and lower coil portions and holding said wall away from the coil when the housing is evacuated, so that said wall does not press said insulation against the coil,

said transverse support means and coil-confining member passing one another within said housing without touching so that said transverse support means does not conduct heat from the wall to said coil-confining member.

4,609,110

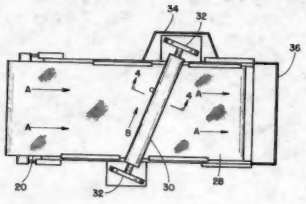
SEED SEPARATING APPARATUS AND METHOD

Marvin Schulman, Howell, and Richard B. Stevenson, Englishtown, both of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Aug. 20, 1984, Ser. No. 642,623

Int. Cl.[4] B07B *13/05;* A23N *15/02*

U.S. Cl. 209—663 **22 Claims**



1. An apparatus for the separation of seeds from seed-containing fruit rag, such as seed sacks, membranes and albedo and the like, comprising:

(a) an endless continuously driven conveyor belt having a generally horizontal upper run, said seed-containing fruit rag being deposited on the upstream end of said upper conveyor run;

(b) at least one roller mounted to freely rotatably extend in closely spaced parallel relationship across said upper belt run and extending thereacross at an angle with respect to the direction of movement of said conveyor belt, said roller having a relatively smooth cylindrical outer surface, and said conveyor belt having a rougher surface finish than the cylindrical surface of said roller, said roller being spaced to form a predetermined gap with said upper belt run to facilitate the fruit rag being squeezed through the gap between said roller and the surface of the belt and to continue being conveyed on said belt run towards the downstream end thereof while inhibiting passage of seeds through the gap between said roller and belt run to effect separation of the seeds from said fruit rag and to cause the seeds to be conveyed along the axial length of said roller and discharged at one side of said conveyor belt, and

(c) barrier means contacting the outer cylindrical surface of said roller and said upper conveyor belt run to prevent the fruit rag from sliding towards the side of the belt during separation of the seed from said fruit rag while permitting passage of said seed past said barrier means.

4,609,111

ROTATABLE STAND

Maurice J. Astill, Barkes Corner, Pyes Pa Road, Tauranga, New Zealand

Filed Apr. 6, 1984, Ser. No. 597,356

Int. Cl.[4] A47F *3/08*

U.S. Cl. 211—1.5 **1 Claim**

1. A rotatable stand comprising:

a static base;

a rotatable hub pivotally mounted on said base, said hub having a vertical axis;

a main beam supported horizontally on the hub and extending diametrically thereof;

two pairs of extensible limbs extending from said main beam to form an H-configuration, each limb having a supported end connected to the spine beam and a free end;

a wheel supporting platform carried at the free end of each limb;

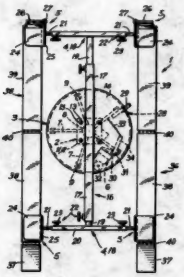
drive means for rotating the hub;

brake means for arresting the hub;

the two platforms of one pair of limbs having a leading edge lying transversely to the longitudinal direction and a

wheel-arresting chock associated with each of the two platforms arranged to pivot between the wheel arresting position parallel to the leading edge and a non-arresting position clear of the leading edge;

each said wheel arresting chock being pivoted at one of its ends for movement about an axis perpendicular to the



associated said platform, said axis being parallel to the vertical axis of the hub; and,

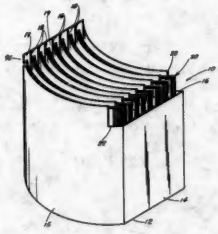
removable platform loading aids positioned beneath respective pairs of platforms at opposite sides respective pairs of platforms at opposite sides of said main beam and acting to stabilize said stand during the loading thereof.

4,609,112

FILING APPARATUS

Joseph A. A. Belanger, deceased, late of Houston, Tex., and by Claude M. Belanger, executor, 3125 Cedarwood Village Pl., Pensacola, Fla. 32504

Filed Nov. 26, 1984, Ser. No. 674,765
Int. Cl.[4] A47F *7/00*
U.S. Cl. 211—45 **9 Claims**



1. A depository for storing flexible sheets comprising:

a. a base and upstanding, flexible and expandable parallel side members and curvilinear shaped parallel front and rear members forming a chamber having an open upper face; and

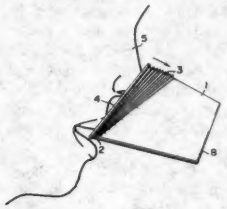
b. a plurality of parallel spaced-apart vertical curvilinear dividers cooperating with said side members and positioned between said front and rear members to define a plurality of compartments adapted to retain individual flexible sheets in spaced relation, each of said dividers having a notch formed in the side edge thereof extending inwardly and downwardly from an upper corner thereof, each of said flexible sheets having means provided thereon for detachably securing an indexing means thereto.

4,609,113

CUP PERMITTING EASY DRINKING-UP

Norio Seki, 82-1 Kakida, Shimizu-cho, Suntou-gun, Shizuoka-ken, Japan

Filed Oct. 3, 1984, Ser. No. 657,335
Claims priority, application Japan, May 8, 1984, 59-90202
Int. Cl.[4] B65D *23/00*
U.S. Cl. 215—1 R **4 Claims**



1. In a cup adapted for use by an individual in drinking liquids therefrom, wherein said cup includes a bottom wall and a cylindrical side wall extending upward from said cup bottom, said side wall terminating in an upper annular edge, wherein a portion of said upper annular edge is contacted with the individual's lips for drinking, and wherein the cup is tilted during drinking so that the portion of said annular edge opposite said lip-contact portion contacts the individual's face to thereby permit the individual from drinking the entire contents of the cup without tilting his head backwards, wherein the improvement comprises:

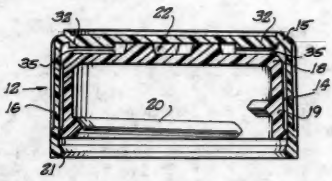
means for selectively collapsing the cylindrical side wall of said cup so that the portion of said side wall located under the face-contact portion of said annular edge collapses when said face-contact portion contacts the individual's face, but where the portion of the side wall under said lip-contact portion remains rigid to thereby allow the individual to drink the entire contents of the cup without having to tilt their head backwards; wherein said means for selectively collapsing the cylindrical side wall includes collapsible bellows-like corrugations in said cylindrical side wall portion located parallel to and under the face-contact portion of the annular edge, said bellows-like corrugations extending partially around said cylindrical side wall and having an area located under the lip-contact portion of said annular edge free of said means to thereby prevent the portion of said side wall located under said lip-contact portion from collapsing.

4,609,114

SAFETY CLOSURE WITH NESTED CAPS

Gerald L. Roy, Lancaster, Pa., assignor to Kerr Glass Manufacturing Corporation, Los Angeles, Calif.

Filed Apr. 23, 1985, Ser. No. 726,130
Int. Cl.[4] B65D *55/02*
U.S. Cl. 215—220 **7 Claims**



1. A safety closure for a container comprising:

an inner cap having a rigid, non-deformable, planar upper end and a generally cylindrical skirt with a smooth outer surface, the inner surface of the skirt being adapted to be threadably secured on the container for effecting the closure thereof;

an outer cap coaxially aligned with and generally overlapping the inner cap, the outer cap having a resilient, planar upper end and a generally cylindrical skirt with a smooth inner surface;

inter-engageable unidirectional drive means disposed on the inner side of the upper end of the outer cap and on the outer side of the upper end of the inner cap and encircling a central planar portion of the inner and outer caps about the axis of the closure to drive the inner cap in a closing direction upon depression and simultaneous turning movement of the central portion of the end of the outer cap;

selectively engageable drive means disposed at the peripheries of the inner side of the upper end of the outer cap and the outer side of the upper end of the inner cap and extending radially outwardly to the skirts of the caps, such selectively engageable drive means being engageable only upon deformation of the peripheral region of the resilient upper end of the outer cap and operable upon a simultaneous turning movement of the outer cap in the opening direction to unthread the inner cap from the container,

said inter-engageable drive means engaging a planar surface of the opposing cap and spacing said central planar portions of said end walls of said caps from one another.

4,609,115

TAMPER-EVIDENT CLOSURE AND BOTTLE ASSEMBLY

David N. Moore, Plainfield, and Bridgett Zemlo, Glendale Heights, both of Ill., assignors to Phoenix Closures, Inc., Naperville, Ill.

Filed May 15, 1985, Ser. No. 734,580
Int. Cl.[4] B65D *41/34*
U.S. Cl. 215—252 **12 Claims**

1. A tamper-evident container closure and container assembly, comprising:

a container having a threaded mouth portion;

a plurality of ratchet teeth members adjacent said mouth portion;

a threaded cap for engaging the threaded mouth portion of said container;

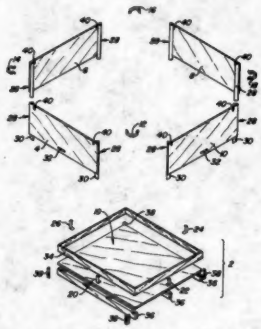
a ring frangibly coupled to said threaded cap by a plurality of frangible connector elements disposed between a plurality of pawls, at least one pawl frangibly connected to said threaded cap for interlockably engaging said plurality of ratchet teeth members on said container when the cap is rotated in the direction of cap twist-off and wherein the frangible connection of the pawl to the threaded cap are broken when the cap is rotated in the direction of cap twist-on.

4,609,116

PRODUCE BIN

Stanton E. Simms, Ceres, Calif., assignor to Calpine Containers, Inc., Modesto, Calif.

Filed May 1, 1985, Ser. No. 729,378
Int. Cl.[4] B65D *19/16*
U.S. Cl. 217—12 R **8 Claims**



1. In an improved portable and disassemblable bulk container having a bottom and side panels, the improvement comprising:

at least one upright flange along the upper periphery of the bottom;

miter strips secured adjacent to the normally vertical side edges of each of the panels and extending beyond the lower edge of the panels to support the panels in alignment with and above said flange;

each of the side panels having vertical slots extending from the upper edges of the panels and spaced apart from each side edge of each of the panels; and

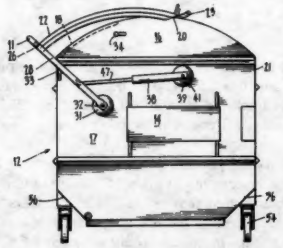
removable, interchangeable locking clips spanning the beveled exterior of the corners formed by the adjacent panels with abutted miter strips placed in alignment with and above said flange and terminating in L-shaped bends to be slidably accepted in said vertical slots and to extend along the interior surface of the panels.

4,609,117

WASTE CONTAINER

Noel G. Pamment, Strathmore, Australia, assignor to Industrial Containers (Aust.) Pty. Ltd., Australia

Filed Jun. 17, 1985, Ser. No. 745,647
Claims priority, application Australia, Jun. 29, 1984, PG5763; Feb. 13, 1985, PG9261
Int. Cl.[4] B65F *1/14*
U.S. Cl. 220—1 T **7 Claims**



1. A waste container having a pair of arms extending upwardly from pivotal connections on opposed container end

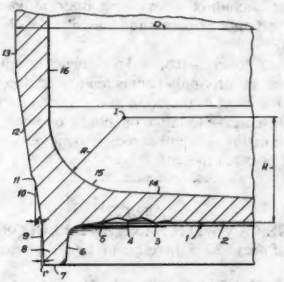
walls, each pivotal connection comprising a frusto-conical mounting member fixed to the respective end wall and a pivot stud extending from the frustum surface of the mounting member to receive the respective arm so that it is spaced from the container end wall, hinge means pivotally connecting upper ends of the arms to a rear edge of a curved lid which closes at least two thirds of the area forming the container opening as defined by the upper curved edges of the end walls and upper edges of front and rear walls, a rear closure panel closing the remaining rear portion of the container opening, the length of the arms and location of the mounting members therefore being so arranged that the rear edge of the lid is raised relative to a front edge of the rear closure panel to permit the lid to be pivoted rearwardly about the pivot studs, guide means on the front, outer edges of the lid which engage and slide along the curved upper edges of the end walls during opening and closing movement of the lid, stop means on the container end walls to limit relative pivotal movement of the arms, and biasing means on each end of the container, each said biasing means comprising a pair of compression springs disposed end to end in a housing pivoted at one end to a respective end wall, an operating rod extending through an opening in the other end of the housing and pivotally connected to a respective arm, and abutment means connected to the operating rod and disposed between the adjacent ends of the compression springs.

4,609,118

CONVEX TYPE BOTTOM WITH A BEARING RIM FOR BOTTLES FOR INDUSTRIAL GASES OBTAINED BY MEANS OF HOT FORGING FROM A STEEL BILLET

Italo Pilotto, Castello di Godrego, and Gerardo Bozzetto, Castelfranco Veneto, both of Italy, assignors to Simmel S.p.A.

Filed Feb. 13, 1984, Ser. No. 579,708
Claims priority, application Italy, Feb. 25, 1983, 19767 A/83
Int. Cl.[4] B65D *1/16, 1/44*
U.S. Cl. 220—3 **2 Claims**



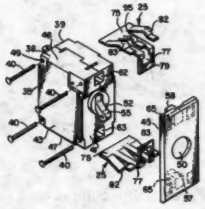
1. A convex type bottom for bottles for industrial gases obtained by hot forging a steel billet into a bottle having a cylindrical wall including an inner surface **(16)** and a bottom joined to said cylindrical wall at the lower end thereof, said bottom including an annular, bearing rim having a flat surface **(7)** for supporting the bottle, a lower outer surface radially inwardly and above said annular, flat surface and an upper inner surface **(14)** opposing said lower outer surface, said upper inner surface connected to said inner surface of said cylindrical wall by a curved area having a radius (R), the bottom characterized in that the lower outer surface of said bottom comprises a flat circular central area **(2)**, a first frustoconical annular area represented by the generatrix (C) adjacent the central area and inclined upwards by approximately 5 degrees, a second frustoconical annular area represented by the generatrix (D') extending from adjacent the first frustoconical annular area and inclined downwards by approximately 15 degrees, and a near vertical frustoconical area **(6)** joined at its upper end to the second frustoconical annular area (D') and on its lower end to the annular, flat surface **(7)** of the bearing rim, the bottle bottom formed so as to have a ratio (H/D) between the distance (H) measured from the center of the radius (R) of the area connecting the inner upper surface of the bottom **(14)** to the inner surface of the cylindrical wall **(16)** of said bottle to the plane of said flat circular central area **(2)** and the outer diameter (D) of the cylindrical wall of the forging billet which is near a minimum value of 0.2, and said first and second frustoconical annular areas provided with corrugations **(3,4,5)** which are formed along and extend from the generatrix (C,D') of the respective first and second frustoconical annular areas so that lines (H,I,J) drawn through the centers of respective corrugations **(3,4,5)** intersect the respective generatrix (C,D'), and there are two corrugations provided with respect to said first frustoconical annular area and one corrugation provided with respect to said second frustoconical annular area.

4,609,119

RETAINING DEVICE FOR MOUNTING ELECTRICAL UNITS

Konrad J. Richter, Sr., Lawrenceville, N.J., assignor to Heinemann Electric Company, Lawrenceville, N.J.

Filed Aug. 28, 1985, Ser. No. 771,244
Int. Cl.[4] H02G *3/12*
U.S. Cl. 220—3.5 **55 Claims**



1. A retaining device for retaining a unit within an opening through a panel, the unit being dimensioned to move through the opening and having a face plate on the unit dimensioned to overlap and engage the panel to stop the unit at the panel, the unit ordinarily having a separate retaining device on opposite sides of the unit to retain the unit within the opening, the retaining device comprising:

a. at least one resilient retaining arm connected with the unit extending from the unit toward the face plate and having in sequence a cam surface diverging from the unit for engaging an edge of the opening and a retaining surface extending back toward the unit so that during insertion of the unit into the opening engagement of the cam surface with the edge of the opening causes the retaining arm to resiliently yield against the edge and to depress toward the unit until the retaining surface is moved into engagement with the edge of the opening allowing the retaining arm to move back away from the unit so that the retaining surface holds the panel against the face plate when the unit is fully inserted; and

b. a separate resilient lock arm connected with the unit proximate the retaining arm extending generally parallel to the retaining arm toward the face plate, said lock arm diverging from the unit and having in sequence a latch element for abutting the panel at an edge of the opening to latch the unit in position in the panel opening and a latch release to enable release of the latch element to permit removal of the unit so that during insertion of the unit into the opening sufficient depression of the lock arm toward the unit permits the latch element to clear the edge and pass through the opening whereupon the return of the lock arm away from the unit moves the latch element into position to abut the panel to prevent withdrawal of the unit from the opening unless the latch release is actuated as the unit is withdrawn to depress the lock arm to permit

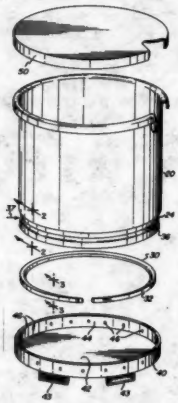
the latch element to clear the edge and pass back through the opening.

4,609,120

PLASTIC CONTAINER AND HANDLING ASSEMBLY

Leonard Lauer, New York, and Susan Spiegel, Old Brookville, both of N.Y., assignors to United Utensils Corporation, Port Washington, N.Y.

Filed Jun. 25, 1985, Ser. No. 748,769
Int. Cl.[4] B65D *1/46*
U.S. Cl. 220—69 12 Claims



11. A plastic vat assembly comprising

a rotationally molded plastic vat having a bottom located encircling rotationally molded groove and a substantially straight side wall adjoining the groove,

a solid metal bar sized to snugly fit within the groove, said metal bar having a side wall that fits substantially flush with the side wall of the pastic vat,

metal support means for embracingly supporting the vat, said metal support means including a wall that encircles and overlies the groove and is in abutment with the metal bar as well as a bottom region of the vat and means affixed to the latter wall to enable manipulation of the vat,

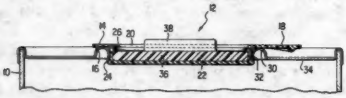
said metal support means being affixed to the metal bar with a plurality of plug welds located around the plastic vat.

4,609,121

SAFETY CLOSURE CAP

Clifford J. Ludwig, Southgate, Ky., assignor to The Drackett Company, Cincinnati, Ohio

Filed Aug. 30, 1985, Ser. No. 771,533
Int. Cl.[4] B65D *53/00*
U.S. Cl. 220—234 10 Claims



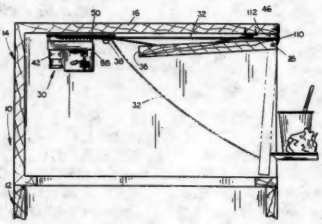
1. A child resistant container construction, the combination of a container having a dispensing opening, a plug formed of flexible material, the plug having a peripheral lip normally engaging a portion of the internal rim of the dispensing opening to normally prevent the plug from being withdrawn from the dispensing opening in a direction away from the container interior, means carried by the plug to prevent its complete entry into the interior of the container, the plug having a radially disposed, manually graspable, lift tab carried by the plug, a locking member of a rigid material rotatably and non-removably mounted in the plug, the locking member normally having its longitudinal axis aligned with the lift tab to thereby prevent the plug from distorting sufficiently to allow its withdrawal from the dispensing opening upon pulling of the lift tab away from the container interior, the locking member being rotatable to a position where said axis is generally at right angles to the lift tab to thereby permit the plug to distort sufficiently to allow it to be withdrawn upon pulling of the lift tab away from the container interior.

4,609,122

AUTOMATIC TOUCH ACTUATED DOOR OPENER

Keith J. Ziegenbein, Rte. 2, Ashland, Nebr. 68003

Filed Nov. 1, 1985, Ser. No. 793,988
Int. Cl.[4] B65D *55/00, 43/24*
U.S. Cl. 220—211 12 Claims



1. In combination,

a trash housing comprising a trash receptacle and a cover therefor,

said cover including a swinging door movable between closed and open positions and biased to the closed position thereof.

an automatic touch actuated door opener comprising,

power means drivingly connected to said door and actuatable for moving the door to open position thereof,

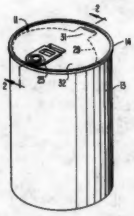
means responsive to initial opening movement of the door for actuating said power means to move said door to the open position thereof.

4,609,123

BEVERAGE CAN WITH SANITARY RECLOSABLE LID

George W. Poncy, 3725 Investment La., Riviera Beach, Fla. 33404

Filed Oct. 7, 1985, Ser. No. 784,746
Int. Cl.[4] B65D *51/22, 43/16*
U.S. Cl. 220—258 12 Claims



1. A can for containing a beverage comprising a can body having a side wall, a lid closing the top of said can, said lid comprising a lower disk and an upper disk, both joined to said side wall around the edge of said lid, said lower disk defining

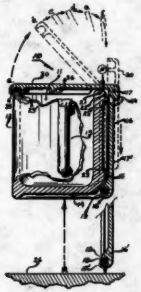
an aperture closed by said upper disk, said upper disk having a tear score line defined therein, said tear score line defining a flap in said upper disk covering said aperture, a handle attached to said flap, said handle comprising means to permit said flap to be pulled up from said aperture by tearing said upper disk along said tear score line.

4,609,124

UNIVERSAL GRAVITY ACTUATED CONTAINER-LID

Wilson J. Malloy, 1009/#1 N. Second St., El Cajon, Calif. 92021

Filed Apr. 1, 1985, Ser. No. 718,742
Int. Cl.[4] B65D *17/50, 41/02*
U.S. Cl. 220—260 **10 Claims**



1. A "Gravity-lid" or G-lid apparatus, the purpose of which is to provide the user with convenience of a semi-automatic opening function for a variety of containers (or housings) which would otherwise have an exposed open-cavity region (or top-area surface); said G-lid featuring a structurally simple aggregation of co-acting members comprising:

A Top member, formed as a substantially flat panel in side-elevation/cross-section, but which can have a rounded or squarish appearing projected major surface area, which is disposed in an approximately horizontal attitude in the closed condition of usage;

A Weighted-slider (or W-slider) component, which is part of the said Top member, but serving as a vertically-jointed/-side-extension thereto, giving the essential weight-bias needed to draw the said Top over the transitional Fulcrum-point;

A Fulcrum member, arranged in a fixed manner to one side of the said cavity or surface region, which cam-like presence causes the over-riding Top member to follow a particularly rapid pivotal transition action described as a 'loci-of-points' between the extreme open & closed positions of said Top;

A Guide-rail (or G-rail) arrangement, set substantially vertical with the said container side, so as to provide a positive plane of slide-travel, which will ultimately locate the Top immediately beside the outer surface of said wall while in the open modality of use; hence, serving as a positive control means, suitably coupled between said Top and said wall by means of constant slip-fit engagement;

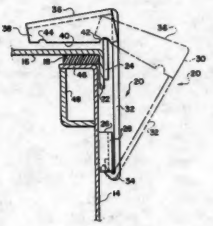
A Travel-negator (or T-negator) designed relative to co-acting movements of the Top and the container Wall, so as to positively limit the extent of Top transfer to a predetermined vertically opened position, yet allowing the Top & W-slider aggregate to be readily extracted if desired, as a seperable sub-assembly detached from the G-rail fixture.

4,609,125

WASTE MATERIAL CONTAINER AND CLOSURE FASTENING MEANS

T. Donald Willingham, Rock Hill, S.C., assignor to General Fabricators, Inc., Rock Hill, S.C.

Filed Nov. 20, 1985, Ser. No. 800,044
Int. Cl.[4] B65D *45/16*
U.S. Cl. 220—324 **8 Claims**



1. A container for waste material comprising:

(a) a receptacle unit for receiving and containing said waste material, said receptacle unit including side walls and a rim portion defining an opening for receiving said waste material;

(b) a removable lid means supported generally at said rim portion of said receptable unit;

(c) gasket means interposed between said lid and said rim portion, said gasket means being formed of a resilient material; and

(d) a locking assembly for locking said lid in place on said receptacle unit, comprising:

(i) an abutment member secured to said lid;

(ii) bracket means secured to said side walls of said receptacle unit; and

(iii) locking means having a first end portion formed to engage said bracket for pivotal movement thereabout, a second end portion formed with a camming surface having at least one indenture therein for selectively receiving said upstanding abutment member, and an intermediate portion interconnecting said first and second end portions, said intermediate portion having a predetermined extending length selected to cause said camming surface to engage said abutment member and press said lid against said gasket means to compress said gasket means during pivotal movement of said locking means about said bracket means, and to cause said locking means to maintain said gasket means in compression when said upstanding abutment member is received with said camming surface indenture, whereby said lid is locked in place by said locking means and said compressed gasket member imposes a bias on said lid to maintain said upstanding abutment member within said indenture.

4,609,126

VENTING CAP FOR APPARATUS HOUSING

George M. Janda, Wheaton, Ill., assignor to GTE Communications Systems Corporation, Northlake, Ill.

Filed Dec. 5, 1985, Ser. No. 804,966
Int. Cl.[4] B65D *51/16*
U.S. Cl. 220—374 **17 Claims**

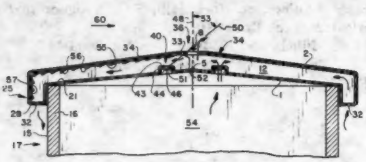
1. A vented cap for covering an apparatus housing utilized in an outdoor environment comprising:

an inner roof panel engaged with a top end of each of a plurality of side walls of said housing;

an outer roof panel attached to, positioned above and spaced apart from said inner roof panel;

an outer aperture formed in said outer roof panel; and

at least one inner aperture formed in said inner roof panel;



whereby an interior space of said housing is vented to said environment while being protected from a plurality of elements in said environment.

4,609,127

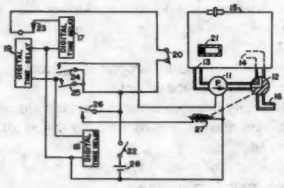
TIMED DISPENSER OF FLUID ADDITIVES

Michael L. Hart, Eldridge, Iowa, assignor to Industrial Technology Corporation, Davenport, Iowa

Filed May 24, 1984, Ser. No. 613,266

Int. Cl.[4] B67D *5/08*

U.S. Cl. 222—66 **3 Claims**



1. A dispenser of fluid additives comprising:

a reservoir having an inlet through the bottom thereof at a first position and an outlet through said bottom at a second position spaced at a substantial distance from said first position,

an electric pump having an inlet and an outlet, said inlet of said pump being fluidly connected to said outlet of said reservoir, fluid control means for selectively connecting said outlet of said electric pump to said inlet of said reservoir and a discharge pipe, said fluid control means normally being connected to permit flow of fluid to said inlet of said reservoir such that said pump when operated normally being effective to circulate and thereby to blend said additives within said reservoir, said fluid control means having an electrical controlling circuit to be energized to electively connect said electric pump with said inlet of said reservoir and said discharge pipe,

a first operating circuit connected to said pump and a second operating circuit connected to said electrical controlling circuit of said fluid control means,

timing delay switching circuits having a first control switching circuit connected to said first operating circuit and a second control switching circuit connected to said second operating circuit,

means for starting operation of said timing delay switching circuits to determine successively and repeatably first, second, and third timing intervals for determining intervals of operation of said first and second control switching circuits and thereby determining intervals of operation of said pump and said fluid control means, said first control switching circuit operating at the end of said first interval to start operation of said pump to blend said additive, said second control switching circuit operating at the end of said second interval for energizing said electrical controlling circuit of said fluid controlling means to interrupt blending of said additives and to discharge said additives from said discharge pipe, both said first and second control switching means operating at the end of said third interval to stop operation of said pump, to connect said fluid control means to said inlet of said reservoir means, and said timing delay switching means at the end of said third interval again starting timing of said first interval.

4,609,128

VOLUMETRIC MEASURING-DOSING DEVICE FOR FLUIDS

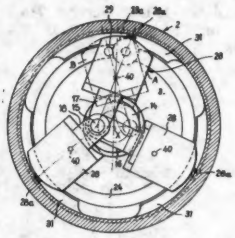
Odile Amelial, 4 Rue Robert De Flers, 75015 Paris, France

Filed Jul. 16, 1985, Ser. No. 755,346

Claims priority, application France, Jul. 19, 1984, 84-11473

Int. Cl.[4] B67D *5/56*

U.S. Cl. 222—129 **12 Claims**



1. A measuring-dosing device for fluids, in particular for the dosing of food in the industrial raising of poultry, pigs or rabbits, irrigation, or any dosing of liquids effected continuously in industry, said device comprising a body having a longitudinal axis, a passageway in said body for the flow of a principal fluid and having an inlet orifice and distribution orifices for the fluid which extend through the body and open onto a side of said body, a housing coaxial with said body and fixed to said side of said body and defining a chamber with which said distribution orifices communicate, a pump having an inlet and an outlet for a secondary fluid to be mixed with the principal fluid and a dosing piston within said pump, means within said chamber for driving said pump, said means comprising at least three rods extending radially of said axis and three second pistons resectively mounted on said three rods, a crank rotatively mounted in said device and having an arm which is parallel to said axis, said three rods being rotatively mounted on said arm, said arms being drivingly connected to said dosing piston for reciprocating said dosing piston, at least three pins parallel to said axis and carried by said body, at least three cylinders respectively pivotally mounted on said three pins, each cylinder being provided with an inlet port for admitting the principal fluid into the cylinder when the inlet port is angularly positioned in confronting relation to a corresponding one of said distribution distribution orifices, means being provided for discharging the principal fluid into said chamber during the oscillation of said cylinders on each side of the respective distribution orifices.

4,609,129

DEVICE FOR INJECTING A FIXING AGENT INTO A DRILLED HOLE FOR ANCHORING A FASTENING ELEMENT INSERTED IN THE DRILLED HOLE

Artur Fischer, Weinhalde 34, 7244 Waldachtal 3/Tumlingen, Fed. Rep. of Germany

Filed Nov. 5, 1984, Ser. No. 668,077

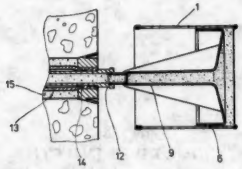
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1983, 3341283

Int. Cl.[4] B65D *25/40*; B67C *3/02*

U.S. Cl. 222—145 **8 Claims**

1. A device for injecting a fixing agent into a drilled hole for anchoring a fastening element inserted in said hole, comprising a vessel filled with one component of the fixing agent and

sealingly closable with sealing means; a plunger including a measuring cavity for measuring a predetermined quantity of another component of said fixing agent, said measuring cavity to be filled with said another component of said fixing agent; and an injection nozzle mounted on said plunger, said plunger being movable into said vessel after said sealing means have been removed from said vessel whereby said another component is poured from said measuring cavity into said vessel filled



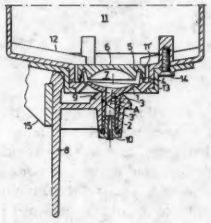
with said one component and mixed to form in said vessel a mixture of said one and another component prior to mounting said plunger nozzle combination on said vessel so that the mixture is discharged from said vessel through said nozzle as pressure is applied to said vessel against said plunger and injection nozzle, said plunger and said injection nozzle having an overall length which matches a height of an interior of said vessel.

4,609,130

ARRANGEMENT IN LIQUID DISPENSERS

Ilmari Katva, Odense, Denmark, assignor to Plum Kemi Produktion A/S, Assens, Denmark

Filed Aug. 17, 1984, Ser. No. 642,069
Claims priority, application Sweden, Aug. 19, 1983, 8304514
Int. Cl.[4] B65D *37/00*
U.S. Cl. 222—207 **20 Claims**



1. A lever-operated diaphragm pump for fluid dispensing apparatus mounted beneath a fluid-storage vessel in fluid communication therewith, said diaphragm pump comprising:

a lever;

a resilient cup-shaped diaphragm having a cavity and including a discharge spout which is formed integrally with the diaphragm, said discharge spout having a fluid passage extending from said cavity and including an obliquely positioned resilient wall which is firmly connected along the greater part of its periphery with said discharge spout;

a plate element made of a nonresilient material having a bottom surface and rigidly disposed above said cavity, said bottom surface and said cavity together forming a pressure chamber, said plate element having at its bottom surface an annular groove which is in fluid communication with said fluid-storage vessel;

a cylindrical flange provided on that side of said cup-shaped diaphragm which is remote from said discharge spout;

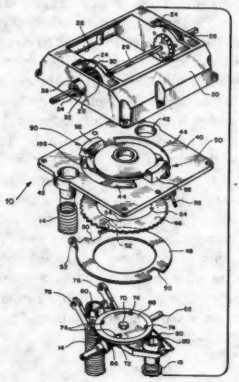
said cylindrical flange having a rim of such dimension which in use needs to be biased in order to be accommodated during assembly along a part of its height within said annular groove arranged in said plate element, whereby upon operation of said lever, said cup-shaped diaphragm is urged to move towards said plate element, thereby increasing fluid pressure in said pressure chamber, in use, to disperse a quantity of said fluid from said pressure chamber through said discharge spout by dilating said obliquely positioned resilient wall.

4,609,131

SEED DISPENSING DEVICE

James B. Tieben, Rte. 1, W. McArtor Rd., Dodge City, Kans. 67801

Filed Jun. 11, 1984, Ser. No. 618,924
Int. Cl.[4] A01C *7/00*
U.S. Cl. 222—278 **10 Claims**



1. A seed dispensing apparatus for dispensing seed from a seed hopper, said apparatus comprising:

a fluted cylinder housing which defines at least one chute extending therethrough, said chute positioned to receive seed from the seed hopper;

a fluted cylinder rotatably mounted to the fluted cylinder housing in the chute, said fluted cylinder defining an array of smaller seed receiving cavities adapted to control the rate at which smaller seed is dispensed out of the chute;

means for defining a first seed tube opening disposed under the chute to receive seeds dispensed by the fluted cylinder;

a seed plate housing defining at least one seed receiving opening positioned to receive seed from the hopper;

a seed plate mounted to rotate under the seed plate housing, said seed plate defining an array of larger seed receiving cavities adapted to control the rate at which larger seed is dispensed out of the seed receiving opening;

means for defining a second seed tube opening disposed under the seed plate to receive seeds dispensed by the seed plate;

means for mounting the seed plate housing in vertical alignment with the fluted cylinder housing under the seed hopper, the upper one of the housings defining a passageway extending therethrough to conduct seed from the hopper to the lower one of the housings such that both the fluted cylinder and the seed plate operate to dispense seed from the hopper;

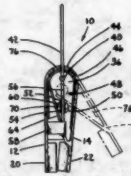
said fluted cylinder operating to dispense relatively smaller seeds, said seed plate operating to dispense relatively larger seeds, and said fluted cylinder and seed plate cooperating to dispense a wide range of sizes of seed.

4,609,132

GRAVITY ACTUATED LOCKING GARMENT HANGER

Douglas B. Brokenshire, 20209 87th. Ave. West, Edmonds, Wash. 98020

Filed Apr. 26, 1985, Ser. No. 727,597
Int. Cl.[4] A47G *25/48;* A41F *1/00*
U.S. Cl. 223—96 11 Claims



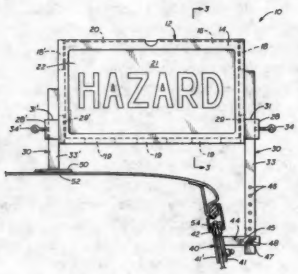
11. A clothes hanger comprising, hanger arms interconnected by hinge means at the upper ends thereof and by spring means biasing the lower ends of the arms to an open position, gravity actuatable lock means arranged between and substantially enclosed by the hanger arms and comprising interfacing wedge surfaces on the respective hanger arms below the hinge means thereof, and a lock actuator situated between said wedge surfaces, and arranged to have a limited degree of guided free fall with respect to said wedge surfaces and the exterior surfaces of the hanger, said wedge surfaces being arranged to occupy planes having a small acute angle therebetween when the hanger arms are in closed position, the hanger arms being locked in such closed position by the lock actuator falling and becoming wedged between said wedge surfaces with the hanger in an upright position and becoming unwedged when the hanger is in an inverted position and the lower ends of the arms are pressed together slightly.

4,609,133

COLLAPSIBLE CAR TOP SIGN CARRIER

Rickie W. Anderson, 2453 Garapan, Houston, Tex. 77091

Filed Aug. 19, 1985, Ser. No. 766,576
Int. Cl.[4] B60R *9/00;* G09F *21/04*
U.S. Cl. 224—317 3 Claims



1. A sign carrier structure adapted to become erected on the top of a car and when not in use to become collapsed into a small space, said structure including:

a frame, which in use extends transversely of said top, for removably accepting a sign therein;

a mount for supporting said frame, said mount including a bracket, a first leg and a second leg, both legs extending downwardly from the opposite sides of said frame;

said bracket being U-shaped and having a base and a pair of downwardly-extending parallel plates, said base being mountable on the top edge of the car's window which, when fully rolled up, securely sandwiches the base between the window and the window's socket; and

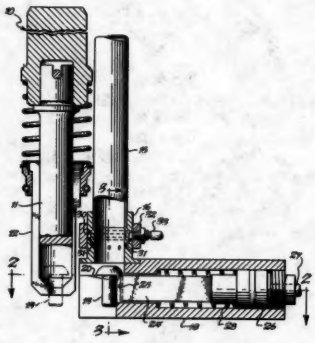
a stiff shoulder laterally and outwardly extending from said bracket, said first leg being securely and removably mounted on said shoulder, and said second leg resting on said top, whereby twisting of said frame is limited by the combined restraining actions of said plates and of said shoulder.

4,609,134

JET GUIDE RIVET INJECTOR

John W. Davern, North Tonawanda, N.Y., assignor to Gemcor Engineering Corp., Buffalo, N.Y.

Continuation of Ser. No. 278,212, Jun. 29, 1981, abandoned.
This application Jan. 4, 1985, Ser. No. 687,509
Int. Cl.[4] B21J *15/00, 15/38*
U.S. Cl. 227—112 9 Claims

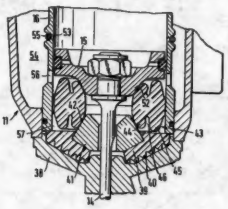


1. Apparatus for feeding and aligning rivets wherein each rivet has a head portion, a shank portion of smaller cross-section extending therefrom, and an axis extending longitudinally of said shank portion, said apparatus comprising a feed tube terminating at one end, said rivets travelling uninterruptdd along said feed tube in a direction toward said one end with said shank portion disposed forwardly of said head portion, means for receiving and supporting rivets upon leaving said feed tube, said one end of said feed tube being adjacent said rivet receiving and supporting means so that upon leaving said feed tube said rivets come to rest on said receiving and supporting means; and means for aligning rivets or the like as they pass through said feed tube with their axes in general alignment with the axis of said feed tube, said means comprising a circumferentially spaced series of air inlet passages near said one end of said feed tube and near said rivet receiving and supporting means for discharging air into said feed tube and directed obliquely toward the axis of said feed tube and in the general direction of movement of the rivets and toward said one end of said feed tube and toward said rivet receiving and supporting means to cause air to enter the feed tube in a generally conical pattern converging substantially at the axis of said feed tube and in the direction of movement of the rivets to impinge against the shanks of the moving rivets and thus establish and maintain axial alignment thereof as said rivets leave said feed tube and come to rest on said rivet receiving and supporting means.

4,609,135
SOUND-DAMPENED DRIVING APPARATUS FOR FASTENERS

Wolfgang Elliesen, Ahrensburg, Fed. Rep. of Germany, assignor to Joh. Friedrich Behrens AG, Fed. Rep. of Germany

Division of Ser. No. 379,970, May 19, 1982, Pat. No. 4,509,669.
This application Oct. 22, 1984, Ser. No. 663,694
Claims priority, application Fed. Rep. of Germany, May 20, 1981, 3119956
Int. Cl.[4] B25C *1/04*
U.S. Cl. 227—130 **6 Claims**

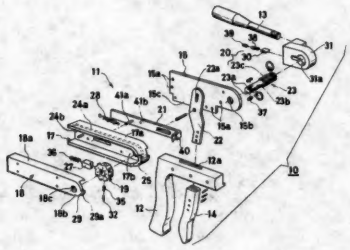


1. In combination, a braking assembly and a fluid operated fastener driving apparatus, the apparatus having a working cylinder and a substantially closed lower end thereof, a driving plunger guided in the working cylinder and mounted to a driving piston, the driving piston having a mounting portion tapering downwardly towards the driving plunger and a surface portion extending radially outwardly from the mounting portion, the braking assembly comprising a ring shaped buffer element positioned in the closed lower cylinder end and surrounding the driving plunger, said buffer element including two radially spaced inner and outer annular bead portions such that upon the downward movement of the driving piston against said buffer element, the mounting portion thereof engages and deforms said inner annular bead portion radially outwardly and upon the further downward movement of the driving piston, the outer annular bead portion is engaged and axially deformed by said surface portion of the driving piston.

4,609,136
RIVET DRIVER

Kunio Hara, Kawasaki, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Aug. 15, 1985, Ser. No. 765,648
Int. Cl.[4] B25C *1/04*
U.S. Cl. 227—136 **1 Claim**



1. A rivet driver used with a rivet belt, said rivet belt comprising a metal strip having an elongate main portion and integral branch portions extending from and at right angles to said main portion and arranged at a predetermined pitch, each of said branch portions having a longitudinally intermediate low mechanical strength portion, and plastic rivets formed one each by injection molding on said branch portions of said metal strip and having a flange formed at the end thereof nearer said main portion, said rivets each being adapted to be inserted through a hole in a work and then squeezed out from the branch portion so as to spread under the work to thereby clamp the work between the lower surface of the flange and the spread portion, the branch portion thereafter being separated from said rivet at said low mechanical strength portion, said rivet driver comprising:

a guide space through which said rivet belt is fed;

rivet feeder means for feeding said rivet belt through said guide space stepwise at increments equal to the pitch of said branch portions;

re-directing means operable in an interlocked relation with the feeding operation of said rivet feeder means for bending the branch portion associated with the rivet located at a driving position in said guide space so that the rivet assumes a different orientation from that of the other rivets in said rivet belt;

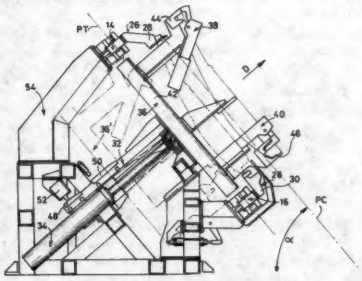
squeezing means for pushing the flange of the re-directed rivet to thereby squeeze out the rivet from the branch portion; and

a restoring mechanism for bending back and restoring the initial orientation of the branch portion bent by said re-directing means and leading the restored branch portion back to said guide space.

4,609,137
UNIT FOR ASSEMBLY OF A MOTOR VEHICLE BODY ELEMENT

Christian De Filippis, Evry Grecy S/Yerres, France, assignor to Renault Automation, Boulogne-Billancourt, France

Filed Jun. 12, 1984, Ser. No. 619,993
Claims priority, application France, May 29, 1984, 84 08379
Int. Cl.[4] B23K *37/04*
U.S. Cl. 228—47 **8 Claims**



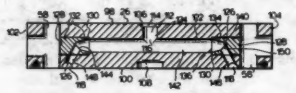
1. An assembly unit for assembling an approximately plane, large-sized motor vehicle body element of the type comprising a plurality of work stations (P1–P6) between which the element is successively transferred by a lengthwise transfer device, and means located at each work station for locating the body element in a plane (PC) forming a first predetermined angle (α) in relation to the horizontal plane on which the assembly unit rests wherein at least one of said work stations further comprises a lifting device for moving the body element in a direction (D) perpendicular to the general plane of the element between an upper work position and an intermediate transfer position in which said body element rests.

4,609,138

METHOD OF MANUFACTURING INJECTION MOLDING MANIFOLD WITH PLUGS

Arthur Harrison, Milton, Canada, assignor to Mold-Masters Limited, Georgetown, Canada

Filed Dec. 2, 1985, Ser. No. 803,158
Claims priority, application Canada, Nov. 22, 1985, 495832
Int. Cl.[4] B23K *33/00*
U.S. Cl. 228—161 5 Claims



1. A method of manufacturing an injection molding manifold having a body with first and second parallel opposing surfaces and first and second opposing ends, the manifold having a hot runner passage which extends from a central inlet on said one surface and branches out from an upstream portion at at least one junction to a plurality of spaced outlets on said second surface, the outlets being smaller in diameter than the inlet, comprising the steps of:

(a) forming the manifold body of a suitable steel to predetermined dimensions;

(b) drilling a longitudinal duct longitudinally through the manifold body from the first end to the second end, the longitudinal duct having a predetermined diameter and extending parallel to the first and second surfaces;

(c) drilling a transverse inlet duct to form said upstream portion of the hot runner passage, the transverse duct extending from the inlet to centrally intersect the longitudinal duct to form the junction;

(d) drilling the longitudinal duct adjacent each end of the manifold body to form enlarged diameter end portions extending from a central portion of the longitudinal duct, each enlarged diameter end portion joining the central portion of the longitudinal duct at a circumferential shoulder;

(e) forming a pair of cylindrical steel plugs to fit into the end portions of the longitudinal duct, each plug having a cylindrical outer surface with at least one circumferential groove extending therearound, and a concentric well extending partially therethrough, the well tapering inwardly from a mouth at one end to a smaller blind end, the mouth being substantially equal in diameter to the central portion of the longitudinal duct;

(f) locating brazing material in each of the circumferential grooves, inserting one of the steel plugs into each of the end portions of the longitudinal duct with the said one end abutting against one of the circumferential shoulders and the mouth of the well in alignment with the central portion of the longitudinal duct, and heating the manifold in a vacuum furnace for a sufficient period of time and at a temperature whereby the brazing material melts and flows around the cylindrical outer surface of the plug to securely fix the plug into the respective end portion of the longitudinal duct in order to effect a seal against leakage, during injection molding, of pressurized melt around the plug;

(g) drilling a pair of diagonal outlet ducts which are smaller in diameter than the central portion of the longitudinal duct, each diagonal duct extending through the manifold body and plug to connect one of the outlets on the second surface of the manifold body to the blind end of the well in a respective one of the plugs; and

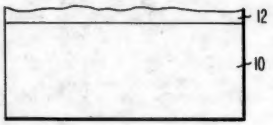
(h) smoothly finishing the junction thereby created in each of the plugs between the longitudinal duct and the respective diagonal outlet duct.

4,609,139

METHOD OF BURNISHING MALLEABLE FILMS ON SEMICONDUCTOR SUBSTRATES

Frank Z. Hawrylo, Hamilton Township, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 14, 1984, Ser. No. 610,016
Int. Cl.[4] B21D *39/00*
U.S. Cl. 228—170 7 Claims



1. A method of burnishing a malleable film on a semiconductor substrate to provide a smooth, defect-free surface comprising:

imparting scratches of a desired depth and spacing into a first major surface of a smooth glass plate;

contacting the first major surface of the glass plate to the malleable film and establishing relative motion therebetween;

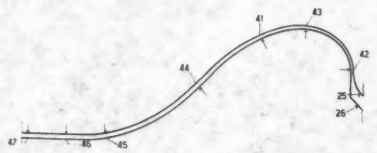
continuing said motion under a desired pressure until a defect-free film surface is provided.

4,609,140

RIGID PAPERBOARD CONTAINER AND METHOD AND APPARATUS FOR PRODUCING SAME

Gerald J. Van Handel, Neenah; John L. Petit, Appleton, and Patrick H. Wnek, Sherwood, all of Wis., assignors to James River - Dixie Northern Inc., Norwalk, Conn.

Continuation of Ser. No. 619,402, Jun. 12, 1984, abandoned, which is a continuation of Ser. No. 367,880, Apr. 13, 1982, abandoned. This application Aug. 12, 1985, Ser. No. 764,965
Int. Cl.[4] B65D *1/00*
U.S. Cl. 229—2.5 R 5 Claims



1. In a paperboard container, integrally press-formed from a paperboard blank to include a bottom wall, an upturned side wall extending from the periphery of the bottom wall and a rim outwardly extending from the periphery of the side wall, the improvement comprising:

a plurality of circumferentially-spaced densified regions radially extending through annular portions of said rim, said densified regions including at least three layers of paperboard reformed into substantially integrated fibrous structures generally inseparable into their constituent layers and having a thickness generally equal to circumferentially adjacent areas of said rim.

4,609,141

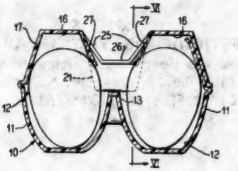
FRAGILE ARTICLE CARTON WITH TOP HAVING RESILIENT ARTICLE ENGAGING FINGERS

Connie Lake, Tinley Park, Ill., assignor to S. Eisenberg & Co., Div. of Creative Industries, Inc., Bridgeview, Ill.

Continuation-in-part of Ser. No. 510,321, Jul. 1, 1983, abandoned. This application Apr. 25, 1984, Ser. No. 602,637

Int. Cl.[4] B65D *1/00*

U.S. Cl. 229—2.5 EC **23 Claims**



1. For use as a carton for eggs or like fragile articles, a tray having a plurality of article carrying cells therein, the end cells being defined by the insides of end walls of the tray and opposite side walls thereof, and spaced separator walls extending across the tray parallel to each other, for the length of the tray and converging toward their upper ends and continuing the cells for the length of the tray, a cover hinged to the tray section along one side thereof, a locking flap extending along the opposite side of the tray from the side of the hinge for the cover section, said cover section having parallel spaced traversely extending abutment separators depending from and spaced along the top thereof and the separators having walls converging toward abutment surfaces thereof, said cover section having a plurality of inwardly extending compression finger means located between said abutment separators biased to extend inwardly of said cover section to form spring article engaging means conforming resiliently to the form of articles in said cells and resiliently retaining fragile articles in said cells against damaging movement thereof in said cells during shipping and handling, and being of sufficient resiliency to retain articles of different configurations and sizes in said cells with a minimum liability towards breakage of the articles during shipping, displaying and handling of the packed cartons by the customer, said finger means biasing said articles towards sid walls of said cells, said article engaging means biasing said articles downwardly and laterally towards and into engagement with side walls of said cell.

4,609,142

RECLOSABLE DISPENSER CARTON AND BLANK THEREFOR

David J. Adamek, Minneapolis, Minn., assignor to Waldorf Corporation, St. Paul, Minn.

Filed Apr. 12, 1985, Ser. No. 722,602

Int. Cl.[4] B65D *5/72*

U.S. Cl. 229—17 SC **11 Claims**

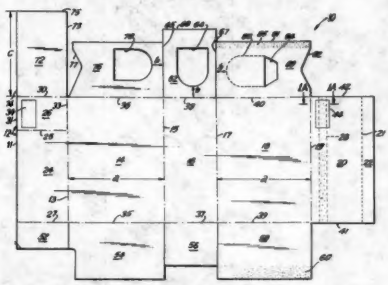
1. A slide top recloseable dispenser carton comprising:

opposed rectangular front and rear walls disposed in spaced parallel relationship;

first and second opposed side walls disposed in spaced parallel relationship and extending between and connecting said front and rear walls, said first side wall including inner and outer panels disposed in face-to-face contacting relationship, said outer panel of said first side wall including a base portion adhered to the inner panel thereof and a hinged portion rotatable about said base portion thereof toward and away from the inner panel;

a bottom wall connected to and extending between the base portion of said first side wall, said second side wall and said front and rear walls; and

a top wall comprising a top support panel articulated to said second side wall and defining the innermost portion of said top wall, said top support panel including an aperture extending therethrough, a slide panel articulated to the hinged portion of the outer panel of said first side wall, said slide panel being disposed in face-to-face contact with said top support panel and covering the aperture therein, and inner and outer top closure panels articulated respectively to said rear and front panels and being folded over said slide panel, said inner top closure panel including an aperture substantially identical to the aperture in said top support panel and disposed in register therewith, said outer top closure panel including an array of perforations



defining a removable closure flap in register with the apertures in said inner top closure panel and said top support panel, whereby rotation of said hinged portion of said first side wall enables movement of the slide panel relative to the apertures in the top wall, said top support panel extending substantially the entire distance between said front and rear panels of said carton, whereby said front and rear panels frictionally support said top support panel in a plane generally orthogonal to the first and second side walls of the carton.

4,609,143

COMBINED LOCK STRUCTURE FOR ARTICLE CARRIER

Peter C. Collura; Richard L. Humphries, and John K. Lever, all of Redwood City, Calif., assignors to Certipak Corporation, Greenwich, Conn.

Continuation of Ser. No. 488,673, Apr. 26, 1983, abandoned. This application Oct. 24, 1984, Ser. No. 664,474

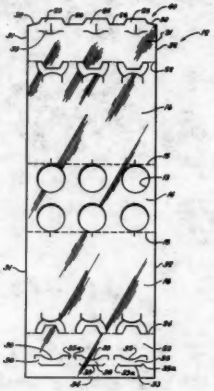
Int. Cl.[4] B65D *5/04, 75/06*

U.S. Cl. 229—40 **12 Claims**

1. An article carrier of the wraparound type of sheet material for packaging a plurality of articles in at least one row including an elongated blank having fold lines to form panels comprising:

a pair of closure panels designed to overlap when applied to the articles to be packaged, a first closure panel of said pair of closure panels including a plurality of locking units, each locking unit having a tongue along a terminal edge of said first panel and a locking tab in longitudinal alignment therewith, a second closure panel of said pair of closure panels including a plurality of first and second transversely elongated slits, each slit being formed by opposite, cooperating edges of sheet material substantially in abutting relationship, said first slits being adjacent and substantially parallel to said second slits and lying between said second slits and a terminal edge of said second closure panel, said terminal edge of said second closure panel being opposite of said terminal edge of said first closure panel on said blank, said first and second slits having closure panel material therebetween, said material forming a full width protector strap extending substantially entirely within a single plane between the substantially abutting edges of said first and second slits, one protector strap being in longitudinal alignment with each locking

unit; each of said second slits having one of said tongues threadable between the deflected edges thereof forming a first opening substantially the thickness of said sheet material so that said tongue overlies said second closure panel when said closure panels are in overlapping relation, each of said first slits having one of said locking tabs punchable



between the deflected edges thereof forming a second opening substantially the thickness of said sheet material so that said locking tab overlies said second closure panel and includes edge-to-edge engagement with said second closure panel, said protector strap overlying said locking tab along the interior of said carrier to retain said locking tab in locked engagement and provide extra strength.

4,609,144

RAILROAD TIE COVER

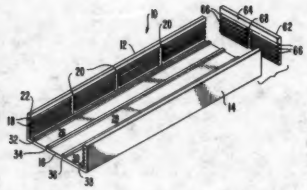
John L. Harmsen, Vienna, Va., assignor to STEDEF S.A., Saint Cloud, France

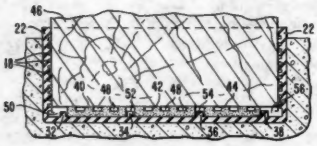
Filed Apr. 27, 1984, Ser. No. 604,469

The portion of the term of this patent subsequent to Nov. 2, 1999, has been disclaimed.

Int. Cl.[4] E01B *26/00*

U.S. Cl. 238—1 **19 Claims**





1. A railroad tie cover for imparting resiliency to a track system while prolonging the life of a tie comprising a substantially rectangular sheet formed of an elastomer material having a first surface and a second surface with a first side and a second side and a center section said center section having means for receiving and fixing the position of one or more specially designed pads in said first surface of said center section, said first side and said second side connected to said center section and adapted to deform so as to orient said first surface of said first and second sides to an angle of about 90 degrees to said first surface of said center section.

4,609,145

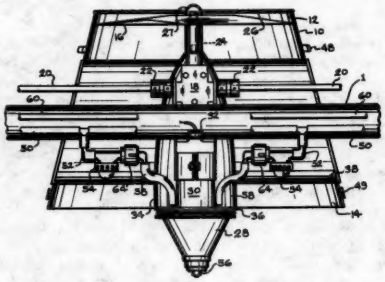
PESTICIDE SPRAYING APPARATUS

Allen L. Miller, 619 Congress Ct., Delaware, Ohio 43015

Filed Nov. 8, 1984, Ser. No. 669,612

Int. Cl.[4] B05B *9/06, 1/20, 3/10;* **A01G** *25/09*

U.S. Cl. 239—77 **18 Claims**



17. An improved spray apparatus comprising, in combination: at least one spraying member, blower means for supplying a column of fluidized air, said blower means including a fan member spaced from and opposed to said spraying member, said blower means further including a housing member positioned adjacent said spraying member, said housing member being of hollow cross section and having open ends, said first open end of said housing member being substantially circular in cross section and said opposed open end of said housing member being generally oval in cross section, said blower means further including a center shroud member located within said housing member between said fan member and said spraying member, whereby during operation of said spray apparatus said column of fluidized air is propelled by said fan member through said housing member and around said center shroud to envelope said spraying member and assist is dispersing such material exiting said spraying member.

4,609,146

SPRINKLER WITH IMPROVED RISER SEAL

Joseph J. Walto, Chaska, Minn., assignor to The Toro Company, Minneapolis, Minn.

Continuation of Ser. No. 530,349, Sep. 8, 1983, abandoned. This application Jun. 13, 1985, Ser. No. 744,306

Int. Cl.[4] B05B *15/10;* **F16J** *15/32*

U.S. Cl. 239—123 **18 Claims**

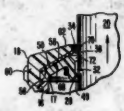
1. A sprinkler for sprinkling a liquid comprising:

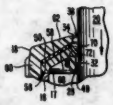
a housing having a hollow interior;

a riser for directing liquid from the sprinkler, said riser being mounted in the hollow interior of said housing for reciprocating motion between an extended sprinkler position and a retracted non-sprinkling position, said riser having an exterior surface and said housing having an interior surface at its upper end between which a gap is defined for permitting the reciprocating motion of said riser relative to said housing; and

riser seal means for sealing said gap, said riser seal means in

a normal orientation contacting the exterior surface of said riser with a first contact area to create a first interference between said seal means and the exterior surface of said riser, said riser seal means including means for increasing the contact area of said seal means with the exterior surface of said riser from said first contact area to a second greater contact area in order to increase the interference between said seal means and the exterior surface of said riser during the retracting motion of said riser whereby the wiping effect of said seal means on the exterior surface of said riser is enhanced during the retracting motion.



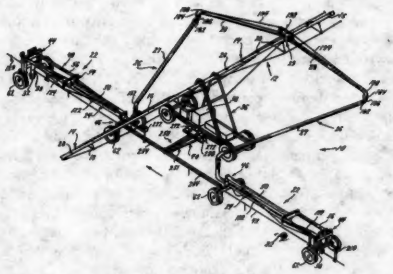


4,609,147

WATER DELIVERY MACHINE FOR AN IRRIGATION SYSTEM

John A. Chapman, Wahoo; Thomas M. Johnson, Elkhorn, and Donald L. Newbold, Freemont, all of Nebr., assignors to Valmont Industries, Inc., Valley, Nebr.

Filed Feb. 24, 1984, Ser. No. 583,571
Int. Cl.[4] B05B *3/18*
U.S. Cl. 239—183 **7 Claims**



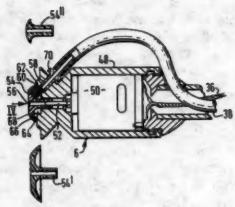
1. In a water delivery machine for delivering water from a pressurized main line to a linear irrigation system, the main line having spaced risers therealong, and wherein said water is delivered continuously as the linear system moves over the field being irrigated, said machine having fore and aft articulated booms, the inner ends of the booms connected to the linear system and the outer ends connected to couplers, said booms providing water conduits to deliver water from the couplers to the linear system, carts supporting the outer ends of said booms and the couplers to which they are connected, and means for alternately and automatically connecting the couplers to the risers as the linear system moves over the field to automatically and continuously deliver water first from one coupler and boom, and then the other coupler and boom, to the linear system, and means for guiding said machine and the linear system to which it is connected, said improvement comprising a cable extending parallel to said main line and defining a path along which the machine and linear system is to travel, each cart having sensing means cooperating with said cable for steering said cart wheels to guide said cart along said cable, said linear system including a main tractor, said cable being laterally displaced from said main tractor, an arm extending laterally from said main tractor, a pivotal linkage having a forward arm section and a lateral arm section and being pivotally connected near the outer end of said lateral arm for pivotal movement about a generally upright axis, the forward end of the forward arm section having means engaging said cable as said linear system travels over the field, whereby displacement of the main tractor relative to said cable causes said linkage to pivot and thereby translate said displacement to a deflection of said lateral arm section, and means for sensing said deflection to affect a corrective movement of said linear irrigation system to maintain within prescribed limits a fixed lateral relationship between said main tractor and said cable.

4,609,148

SPRAYING EQUIPMENT

David C. Gill, 5 The Keep, Millers Lodge, Bristol, BS15 5YQ, United Kingdom

Filed Nov. 29, 1983, Ser. No. 555,958
Claims priority, application United Kingdom, Nov. 30, 1982, 8234125; Jan. 8, 1983, 8320678; Feb. 23, 1983, 8305003
Int. Cl.[4] B05B *3/10*
U.S. Cl. 239—224 **5 Claims**



1. A spraying device comprising:

a body having an end face;

an atomizing disc having a fluid receiving surface bounded by an outer periphery of the disc and being mounted for rotation on the body about a rotary axis, the fluid receiving surface and the end face of the body being disposed opposite to and spaced from each other to define an annular channel, the end face projecting beyond the outer periphery of the disc, the annular channel including a narrow annular gap defined between the fluid receiving surface and the end face of the body, the gap being coaxial with the disc and disposed radially inwardly of the outer periphery of the disc, all parts of the disc which are situated radially outwardly of the gap being spaced from the end face of the body by a distance which is greater than the width of the gap;

drive means for driving the atomizing disc about the rotary axis;

fluid supply means disposed to supply fluid to the fluid receiving surface at a position radially inwards of the gap;

whereby, in operation fluid flows through the gap to be ejected from the outer periphery of the disc under the action of centrifugal force, the body exerting a circumferential wiping action on the fluid during flow of the fluid through the gap thereby to distribute the fluid about the rotary axis over the fluid receiving surface.

4,609,149

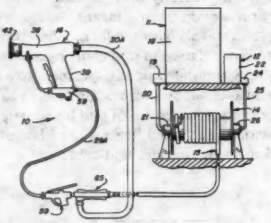
INJECTION GUN SYSTEM FOR LAWN TREATMENT

Thomas Jessen, P.O. Box 8326, Merrillville, Ind. 46410

Continuation of Ser. No. 518,830, Aug. 1, 1983, abandoned. This application Feb. 7, 1985, Ser. No. 699,486

Int. Cl.[4] B05B *7/04*

U.S. Cl. 239—310 10 Claims



1. An injection gun system for lawn treatment adapted to permit application of a treating fluid and a main stream fluid through an injection gun, comprising, in combination:

(a) a first pressurized source for main stream fluid;

(b) a second pressurized source for treating fluid;

(c) a reach of hose comprising a main stream fluid conduit and a treating fluid conduit, each said conduit having an upstream end and a downstream end;

(d) means connecting the upstream end of said main stream fluid conduit to said first pressurized source and the upstream end of said treating fluid conduit to said second pressurized fluid source;

(e) an injection gun having an input connection for main stream fluid and an input connection for treating fluid;

(f) a hand held manifold disposed adjacent to but spaced apart from said injection gun and having main stream fluid conduit connections and treating fluid conduit connections thereon;

(g) means connecting the downstream end of said main stream conduit to a respective main stream conduit connection on said manifold;

(h) means connecting the downstream end of said treating fluid conduit to a respective treating fluid conduit connection on said manifold;

(i) a first flexible conduit interposed between a main stream fluid conduit connection on said manifold and said main stream fluid input connection on said gun; and

(j) a second flexible conduit interposed between a treating fluid conduit connection on said manifold and said treating fluid input connection on said gun.

9. In an injection gun system for lawn treatment having a pressurized source of main stream liquid solution and a pressurized source of treating liquid solution, an injection gun comprising, in combination:

(a) a barrel having a longitudinal bore therethourgh, said bore having a diameter increasing toward the forward end of said barrel;

(b) a handle fixed to said barrel;

(c) a main stream solution input connection at the breech end of said barrel;

(d) a main stream solution regulating valve in said barrel;

(e) a trigger pivotally mounted on said handle and operatively connected to said main stream regulating valve;

(f) a treating solution regulating valve fixed to said handle and disposed for operative engagement by said trigger;

(g) said treating solution regulating valve having an input connection and an output connection;

(h) a fixed conduit on said gun interposed between said treating solution output connection and a passage communicating with the forward end portion of said barrel;

(i) said fixed conduit having an end portion extending through said passage into said increasing diameter section of said longitudinal bore and difining an injection discharge opening in the main stream solution and spaced from the peripheral surface of said bore.

4,609,150

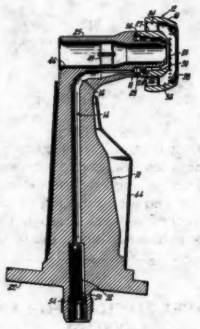
FUEL NOZZLE FOR GAS TURBINE ENGINE

Francis C. Pane, Jr., South Windsor; John A. Matthews, Melrose; Richard R. Wright, Willimantic; John M. Sarnik, Marlborough, and Thomas Frasca, Wethersfield, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 19, 1983, Ser. No. 515,097

Int. Cl.[4] B05B *15/00*

U.S. Cl. 239—397.5 5 Claims



1. A fuel nozzle for a gas turbine engine including a single casted support member having a radially extending base portion and an axially extending portion, a fuel passageway in said casted support member extending from said base portion to the end of the axial extending portion with a smooth radius turn from said radially extending portion to said axial extending portion and a transition from said turn from a circular to an annular cross section, a single casted head portion including a first frustoconically shaped inner member having an annular fuel swirler orifice formed therein connected in flow relationship with said fuel passageway, a second frustoconically shaped outer member spaced from and surrounding said frustoconically shaped inner member being supported thereto by circumferentially disposed vanes therebetween and defining with the end of said axially extending portion a fuel passage connected in flow relationship to said fuel swirler orifice, the end of said first frustoconically shaped inner member defining a film lip, means for joining said head portion at the end remote from said film lip to said single casted support member at a juncture adjacent said fuel orifice, and an open ended axial flow passageway for conducting air therethrough.

4,609,151

MATERIAL SPREADER HAVING MULTIPLE COMPARTMENTS AND MIXER

Thomas A. Crowley, 24450 Glenbrook Blvd., Euclid, Ohio 44117

Continuation of Ser. No. 433,088, Oct. 6, 1982, abandoned. This application Oct. 9, 1984, Ser. No. 658,470

Int. Cl.[4] A01C *7/00, 17/00*

U.S. Cl. 239—656 5 Claims

1. A hand propelled device for spreading diverse granular material such as fertilizer, seeds or pesticides onto a lawn, comprising:

(a) a support frame and a pair of ground engaging wheels for rollingly supporting said frame;

(b) a hopper attached to the support frame defining at least two, substantially isolated, material compartments;

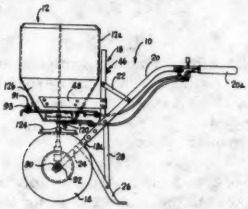
(c) structure defining a discharge opening in a compartment base plate forming a part of each compartment;

(d) a variable discharge control means associated with at least one of said discharge openings, said variable control means including an operator acfuable control mounted to said handle for remotely operating a metering gate for varying the effective size of said discharge opening;

(e) a blending chamber disposed below said compartments and defined at least in part by an underside of said compartment base plate a transverse bottom plate and sidewalls extending from said compartment base plate to said bottom plate;

(f) a blending disk disposed within said blending chamber, operative to blend material received in said blending chamber as the material is discharged from said discharge openings formed in said base plate, said blending disk and discharge openings arranged such that material discharged through said openings from said compartments falls onto an upper surface of said blending disk;

(g) said blending disk including a plurality of through holes such that at least some of the material discharged from said discharge openings passes through said through holes



whereas other material is carried by said disk for at least a portion of a revolution of said disk whereby blending of said material occurs as said material passes through said blending chamber;

(h) said disk rotatable in a plane located intermediate said compartment base plate and said bottom plate;

(i) drive means for imparting rotation to said disk whenever said device is advanced, said drive means including an axle drivingly engaged by at least one of said ground engaging wheels and means coupling rotation of said axle to said disk;

(j) said bottom plate defining an outlet located below said blending disk;

(k) remotely actuated on/off outlet control means for controlling the discharge of blended material from said blending chamber, through said outlet;

(l) distribution means including a broadcast spinner for distributing material discharged by said blending chamber along a predetermined path, said broadcast spinner operatively coupled to said drive means and rotatable in a plane substantially parallel to the plane of said blending disk.

4,609,152

METHOD AND APPARATUS FOR APPLYING POWDERED SUBSTANCES ON FARM FIELDS, FORESTS AND SWAMP AREAS

Genaro C. Hernandez, Paseo de las Fuentes, 4412 Frace, Villa de las Fuentes, Monterrey, Nuevo Leon, Mexico

Filed Jul. 23, 1985, Ser. No. 757,938

Int. Cl.[4] A01C *19/00;* **B05B** *15/06;* **A62C** *31/24;* **A47C** *7/74*

U.S. Cl. 239—659 **14 Claims**

14. Wind-powered apparatus for spreading a powder substance over an area, comprising:

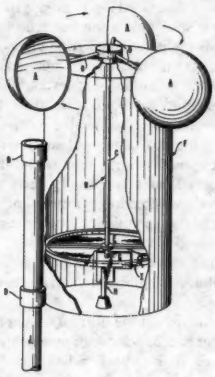
a housing having a closable top, a side wall and an open lower end;

a sieve located within said housing; and

a wind motor assembly including a center pole, a plurality of blades, a plate, means for contacting said sieve and a counterweight assembly;

said center pole being rotatably received by housing, said blades being attached to said center pole, said plate being attached to said center pole;

said counterweight assembly and said contacting means being attached to said plate;



wherein when the wind motor assembly is rotating over a predetermined rpm, said plate and counterweight assembly bring said contacting means out of contact with the sieve.

4,609,153

DEVICE FOR SPREADING GRANULAR AND/OR POWDERY MATERIAL

Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

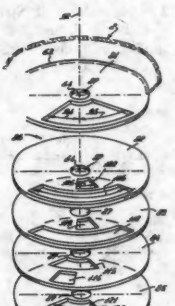
PCT No. PCT/NL82/00028, § 371 Date May 6, 1983, § 102(e) Date May 6, 1983, PCT Pub. No. WO83/00793, PCT Pub. Date Mar. 17, 1983

Continuation of Ser. No. 498,192, May 6, 1983, abandoned. This PCT application Sep. 6, 1982, Ser. No. 798,719

Claims priority, application Netherlands, Sep. 7, 1981, 8104119; Sep. 7, 1981, 8104120

Int. Cl.[4] A01C *17/00, 19/00*

U.S. Cl. 239—665 **28 Claims**



24. A low profile driving mechanism for driving two side-by-side distribution members of agricultural spreaders for fertilizer and the like at more than one selected rotational speed in opposite directions, said distribution members being disposed under a hopper which has means for delivering materials

such as fertilizer or the like separately to each said distribution member, the mechanism comprising an input shaft adapted to be connected to the power take-off shaft of a tractor, an intermediate shaft, readily interchangeable gears connecting said input shaft to said intermediate shaft, a transfer shaft mechanically interconnected to said intermediate shaft, an even number of intermeshing spur gears, the outermost of said spur gears having upstanding shafts which rotate respective said distribution members, an innermost said spur gear being rotated by said transfer shaft, said input shaft extending under at least one innermost said spur gear and extending forwardly relative thereto while said interchangeable gears are located rearwardly relative thereto, said input shaft and said intermediate shaft being substantially horizontal, said transfer shaft and said upstanding shafts being substantially vertical.

28. A device for spreading granular or powdery material such as fertilizer and seed which comprises:

a hopper for said material;

a rotatable distribution member disposed under said hopper, said distribution member revolving about a substantially vertical axis;

a dosing mechanism at the bottom of said hopper comprising said bottom and at least two superimposed dosing plates which each define two radially-spaced passages, said plates being selectively movable relative to said axis, said dosing mechanism including said radially-spaced passages, defining two delivery openings, the first of said delivery openings being adjacent said axis and inboard the second of said delivery openings which is spaced outboard the first, said delivery openings being independently adjustable within limits of said radially-spaced passages' angular relationship to each other relative to said axis and said hopper so that the directions and widths of sectors of material ejected by said distribution member can be adjusted, an outboard of said passages extending a greater width in degrees of arc than an inboard said passage on one of said dosing plates and an inboard of said passages extending a greater width in degrees of arc than an outboard said passage on the other of said dosing plates.

4,609,154

WATER IRRIGATION APPARATUS AND PIPE CONSTRUCTION PARTICULARLY USEFUL THEREIN

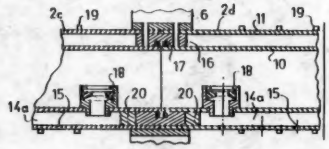
Isaac Rinkewich, 12 Fishman Maimon Street, Tel-Aviv, Israel

Filed Mar. 29, 1984, Ser. No. 594,868

Claims priority, application Israel, Feb. 7, 1984, 70892

Int. Cl.[4] A01G *25/02*

U.S. Cl. 239—713 **19 Claims**



1. Water irrigation apparatus including a water supply pipe having means for supporting same between large spans thereof and for moving the pipe over the ground to be irrigated, characterized in that said water supply pipe iucludes a plurality of coaxial tubes extending the length of said supply tube, including at least an inner tube and an outer tube, and a plurality of longitudinally-extending circumferentially-spaced radial ribs supporting said inner tube within and spaced from said outer tube; means for inletting water into said inner tube; and means for outletting water therefrom.

4,609,155

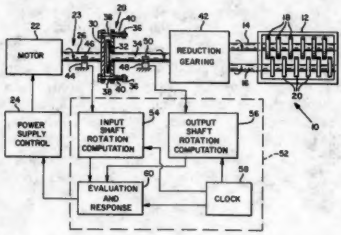
SHREDDING APPARATUS INCLUDING OVERLOAD PROTECTION OF DRIVE LINE

Thomas J. Garnier, Portland, Oreg., assignor to Shredding Systems, Inc., Wilsonville, Oreg.

Filed Apr. 9, 1985, Ser. No. 721,473

Int. Cl.[4] B02C *25/00*

U.S. Cl. 241—30 **11 Claims**



1. Apparatus for comminuting materials comprising at least one pair of rotatable cutter shafts equipped with fixedly mounted rotary cutters which cooperatively interact to shred material, including:

(a) a drive motor having a shaft;

(b) a drive line interconnecting said drive motor shaft with at least one of said cutter shafts, for rotating the cutter shaft in response to rotation of said motor shaft; and

(c) a torque-limiting coupling included in said drive line, said torque-limiting coupling permitting slippage between said cutter shaft and said drive motor shaft, to prevent transmission of torque greater than a predetermined value;

(d) first rotation sensing means for sensing the amount of rotation of a first part of said drive line located between said drive motor and said torque-limiting coupling;

(e) second rotation sensing means for sensing the amount of rotation of a second part of said drive line located between said torque-limiting coupling and said at least one of said cutter shafts; and

(f) automatic means for comparing the amounts of rotation of said first and second parts of said drive line and automatically temporarily reversing the direction of rotation of said drive motor in response to a predetermined difference between the respective amounts of rotation of said first and second parts of said drive line within a first predetermined period of time.

4,609,156

APPLIANCE FOR MINCING FOODSTUFFS

Floris Boele, Hoogeveen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 5, 1984, Ser. No. 678,301

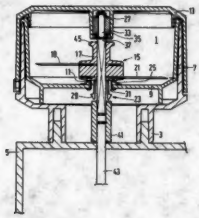
Claims priority, application Netherlands, Dec. 8, 1983, 8304235

Int. Cl.[4] B02C *18/12*

U.S. Cl. 241—199.12 **3 Claims**

1. Apparatus for mincing foodstuffs, which comprises a bowl having a hole in its bottom; a removable cover for closing the bowl; a rotary cutter positioned in the lower portion of said bowl and having a central bore; a coupling shaft extending through the central bore of the rotary cutter and the hole in the bowl bottom to effect rotation of the rotary cutter when the removable cover is placed on the bowl, the upper end of said coupling shaft being journalled on the under side of the removable cover and the lower end of said coupling shaft being

detachably coupled to a drive means; and resilient means associated with the rotary cutter and cooperable with the bowl for



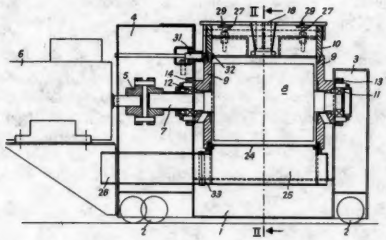
connecting the rotary cutter to the bowl in the axial direction of the coupling shaft.

4,609,157

MACHINE FOR SHREDDING WASTE

Jean Thieux, Louveciennes, France, assignor to Compagnie Clayton, Beauchamp, France

Filed Apr. 19, 1984, Ser. No. 602,110
Claims priority, application France, Apr. 20, 1983, 83 06526
Int. Cl.[4] B02C *23/10*
U.S. Cl. 241—243 **10 Claims**



1. A machine for shredding material comprising a base and a shredder body selectively rotatably mounted on said base, securing means associated with said shredder body and said base and adjustable between a first position and a second position for selectively securing said shredder body to said base wherein said shredder body is fixed to said base when said securing means is in said first position and said shredder body is free to rotate in said base when said securing means is in said second position, static counter-blades provided on said shredder body, a shredder rotor rotatably mounted within said shredder body wherein said shredder rotor rotates relative to said shredder body when said securing means is in said first position and wherein said shredder body rotates in said base coaxial to said shredder rotor when said securing means is in said second position, said shredder rotor being provided with cutting blades for cooperating with said counter-blades on said shredder body when said shredder rotor rotates relative to said shredder body when said securing means is in said first position.

4,609,158

COMPOSITE GRINDING MILL LINER

Clive J. Wilson, Scottsdale, Ariz., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Apr. 16, 1984, Ser. No. 600,534
Int. Cl.[4] B02C *17/22*
U.S. Cl. 241—300 **10 Claims**

1. A liner assembly for the interior shell of a rotating grinding mill adapted to use balls, rods, rocks or the ore itself as the grinding media, the shell having a plurality of apertures and an axis of rotation, comprising:

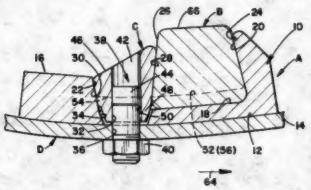
a plurality of longitudinal holder segments having first and second ends, each segment defining a mounting surface constructed for mounting engagement with the inner surface of the shell;

a longitudinal channel being defined in each segment;

a plurality of mounting apertures being provided in each longitudinal channel for alignment with the shell apertures, respectively;

a plurality of longitudinally extending first wear inserts having a greater abrasion resistance than said holder segments, a plurality of said wear inserts adapted to be radially positioned in each of said channels of of said holder segments;

a plurality of longitudinally extending wedge members adapted to be positioned radially in said channel of each of said holder segments, a plurality of mounting apertures



being provided in said wedge members, said wedge member mounting apertures being aligned with said holder segment mounting apertures and the shell apertures, and wherein said longitudinal faces of said holder segment channels, said wear inserts, and said wedge members are so configured when assembled as to wedge said wear members in said channels and prevent radial withdrawal of said wear member from their channels; and,

a plurality of fastening means, each passing radially through said aligned mounting apertures of said wedge members, said holder segments and the shell apertures, for being the sole fastening of each of said holder segments directly to the shell and being, through the wedging of said wedge members, the sole fastening of said wear inserts in said channel;

whereby wear inserts may be removed by removing only the associated wedge members and fastening means without removing any other wedge members or fastening means and without removing any holder segment.

4,609,159

THREAD WINDING GEOMETRY

Adolf Flüeli, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Apr. 6, 1984, Ser. No. 597,373
Int. Cl.[4] B65H *54/42*
U.S. Cl. 242—18 DD **15 Claims**

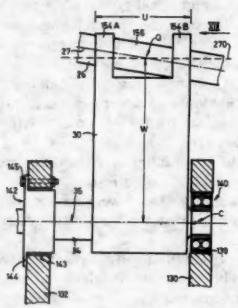
1. A winding maching for receiving and winding at least one thread into a cylindrical package comprising

a cylindrical contact roll rotatable about a longitudinal roll axis and contacting the circumference of the package during formation thereof;

at least one chuck for receiving at least one bobbin tube for formation of the package thereon; and

a carrier member having said chuck supported thereon in cantilever-fashion for rotation about a longitudinal chuck axis, said carrier member being rotatable about a predetermined carrier rotation axis to move said chuck towards and away from an initial winding position in which said tube contacts said contact roll, said carrier rotation axis

being disposed in nonparallel relation to said contact roll axis and said chuck axis being disposed parallel to said



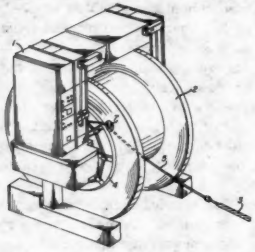
contact roll axis at least at one position of said chuck during formation of the package.

4,609,160

WINDING DEVICE FOR DRAWING-IN STRAND MATERIALS ON A DRUM

Gustaf Linderoth, Järfälla, and Börje Ehn, Sundbyberg, both of Sweden, assignors to Skaltek AB, Kungsangen, Sweden

Continuation-in-part of Ser. No. 491,861, May 5, 1983, abandoned. This application Mar. 15, 1985, Ser. No. 712,456
Claims priority, application Sweden, May 7, 1982, 8202891
Int. Cl.[4] B65H *75/00, 75/28, 79/00*
U.S. Cl. 242—54 R **9 Claims**



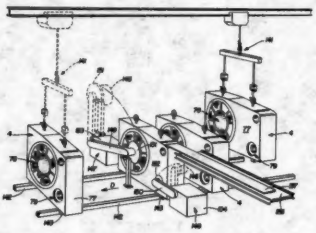
1. A winding machine for drawing-in a leading end of a string-shaped article (3), such as an electric cable, a rope, a wire or the like, to a drum (2) for winding said article onto a drum, comprising a drum having a hub and at least one side wall, mandrels which are insertable into end center holes provided in said drum hub to thereby carry said drum, means for rotatably driving at least one of said mandrels, said at least one side wall provided with an aperture (7) therethrough for an end of said string-shaped article to extend through from inside the drum to the outside of said side wall, the improvement comprising a rope winding wheel (4) rigidly affixed to and co-axially aligned with a rotatably driven one of said mandrels to be rotated therewith, a rope (50) or the like, one end of which is attachable to a leading end of a string-shaped article that is to be wound on said mandrel carried drum, said rope extending through said aperture (7) in said side wall of the drum located adjacent said rope winding wheel and onto said wheel to be wound thereon, while keeping said side wall of the drum adjacent said winding wheel at rest by not fully engaging the driven wheel and mandrel with the drum.

4,609,161

SYSTEM AND APPARATUS FOR STORING AND PROCESSING STRIP MATERIAL

Harley P. Weyand, Jr., Doylestown, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jan. 30, 1985, Ser. No. 696,288
Int. Cl.[4] B65H *16/02, 18/10, 75/00*
U.S. Cl. 242—55 **41 Claims**



1. An improved system for storing and processing strip material including:

(a) a portable storage unit comprising a rigid frame, rotatable spool means for receiving and discharging a length of strip material thereon, and cradle means for loosely supporting the spool means within the frame;

(b) first drive means having an expandable mandrel removably engageable with the spool means for lifting the spool means off the cradle means and then rotating said spool means in a first direction to store a length of the strip material on said spool means;

(c) second drive means having an expandable mandrel removably engageable with the spool means for lifting the spool means off the cradle means and then rotating the spool means in a second direction opposite to the first direction to payout stored strip material from said spool means;

(d) transport means for moving the storage unit between the first and second drive means; and

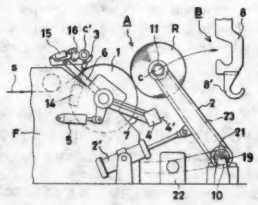
(e) the rigid frame having a base for supporting said frame in a vertical position for engagement of the spool means by the mandrels, and opposite side frame members for supporting said frame in a horizontal position on either of the side frame members when being moved by the transport means.

4,609,162

SHEET WINDING APPARATUS

Hiroshi Kataoka, 3686 Samukawacho, Iyo-Mishima-shi, Ehime-ken, Japan

Filed Dec. 19, 1984, Ser. No. 683,515
Claims priority, application Japan, Dec. 23, 1983, 58-241880
Int. Cl.[4] B65H *18/16*
U.S. Cl. 242—56 R **3 Claims**



1. A sheet winding apparatus comprising:

(a) a rotatable touch roller fixed in place;
(b) a winding core supporting means for supporting winding core at a sheet winding position and releasing the winding core at a sheet roll waiting position after the winding core has had the sheet wound thereabout in the form of a finished sheet roll;
(c) a winding core rotating means for rotating a winding core supported by said winding core supporting means to cause the sheet to be wound about the winding core;
(d) means for stopping supply of the sheet when the sheet has been wound about a winding core to form a finished sheet roll;
(e) means for adjusting the pressure of contact between said touch roller and the sheet at the sheet winding position and, when the sheet has been wound about a winding core in the form of a finished sheet roll, for moving said winding core supporting means from the sheet winding position to the sheet roll waiting position;
(f) a rotary arm means rotatable coaxially with said touch roller for supplying a new winding core to the sheet winding position after said winding core supporting means has moved to the sheet roll waiting position and for holding the sheet between the new winding core and said rotatable touch roller while the sheet is attached to the new winding core;
(g) means for cutting the sheet at the end of each finished sheet roll while the sheet is held between the new winding core and said rotatable touch roller and for causing the cut end of the sheet to adhere to the periphery of the new winding core; and
(h) means for causing said winding core supporting means, after having released a winding core having a finished sheet roll wound thereabout, to return to the sheet winding position to support the new winding core and for causing said rotary arm means to release the new winding core,

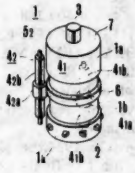
whereby sheet winding is repeated by starting the rotation of the new winding core with said winding core rotating means.

4,609,163

AUTOMATIC FILM WINDING DEVICE

Hiroyuki Kimura; Mutsunobu Yazaki, and Tateo Yamada, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 601,739, Apr. 19, 1984, abandoned, which is a continuation of Ser. No. 368,031, Apr. 13, 1982, abandoned. This application Oct. 9, 1985, Ser. No. 786,173
Claims priority, application Japan, Apr. 17, 1981, 56-58047
Int. Cl.⁴ B65H *75/28*
U.S. Cl. 242—71 **6 Claims**



1. An automatic film winding device for a camera comprising:

a film takeup spool for winding film, said film having a leader narrower than said film at one end of said film, said spool having a friction member provided to extend over at least a predetermined position approximately at the center of said spool for exerting a frictional force upon said film, said spool having its largest outer diameter at said predetermined position; and

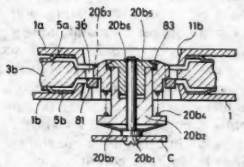
pressure means for pressing one side portion of said narrowed leader on said friction member at said predetermined position, said pressure means causing said one side portion of said film, which contacts said friction member to run at a faster speed than a side portion of said film opposite said one side portion.

4,609,164

CASSETTE TAPE MACHINE

Masahiro Komatsubara; Tetsuro Kamimura; Takugi Inanaga, and Akira Takahashi, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 355,424, Dec. 29, 1981, abandoned. This application Oct. 10, 1984, Ser. No. 659,853
Claims priority, application Japan, Dec. 29, 1980, 55-187923[U]; Dec. 29, 1980, 55-187924[U]; Dec. 29, 1980, 55-187925[U]
Int. Cl.⁴ G11B *15/32*
U.S. Cl. 242—199 **13 Claims**



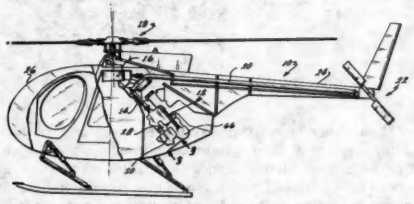
1. In a cassette tape machine of the type having a rotatable shaft unit having projections thereon for engaging projections on a cassette reel to be rotated by said cassette reel when the latter rotates in a tape supply direction, the improvement comprising resilient support means disposed on said shaft unit immediately below said shaft unit projections for resiliently supporting said reel projections, said resilient support means comprising a foamed material such as neoprene sponge or the like.

4,609,165

HELICOPTER AUXILIARY ENERGY SYSTEM

Andrew H. Logan, Rancho Palos Verdes, and John D. Graves, Palos Verdes Estates, both of Calif., assignors to Hughes Helicopters, Inc., Culver City, Calif.

Filed Apr. 25, 1983, Ser. No. 487,966
Int. Cl.⁴ B64C *27/12*
U.S. Cl. 244—17.19 **9 Claims**



2. An apparatus in a rotary wing aircraft for providing auxiliary energy in an autorotation mode, said rotary wing aircraft including a rotor system, a main propulsion engine, and a drive shaft connecting said main propulsion engine with said rotor system, said apparatus comprising:

an overrunning clutch coupled to said main drive shaft, said overrunning clutch for transmitting angular kinetic energy from said main propulsion engine to said main drive shaft;

a secondary drive shaft coupled to said main drive shaft, said

secondary drive shaft having angular kinetic energy transmitted thereto from said main drive shaft;

a housing, said housing defining a drive chamber and a flywheel chamber, said secondary drive shaft extending into said housing into said drive chamber;

fixed-ratio gearing means coupled to said secondary drive shaft extending into said housing and driven thereby, said fixed-ratio gearing means being disposed in said drive chamber of said housing and for transmitting angular kinetic energy to and from said secondary drive shaft;

a flywheel rotatably disposed within said flywheel chamber of said housing and coupled to said fixed-ratio gearing means so that said angular kinetic energy transmitted through said gearing means from said secondary drive shaft is imparted to said flywheel, said flywheel for accumulating and storing angular kinetic energy;

a roughing vacuum pump communicating with said drive chamber of said housing for providing a partial vacuum of a first pressure within said drive chamber whereby air drag with said gearing means is substantially reduced; and

a high vacuum pump communicating with said flywheel chamber of said housing for maintaining a partial vacuum within said flywheel chamber of a second pressure whereby air drag with said flywheel disposed within said flywheel chamber is substantially reduced,

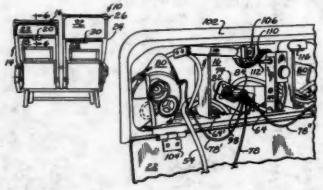
whereby angular kinetic energy is transmitted from said main propulsion engine to said flywheel in said flywheel chamber of said housing to a maximum magnitude as characterized by inflight conditions of said rotary wing aircraft and whereby in the event of failure of said main propulsion engine, angular kinetic energy is transmitted from said flywheel through said gearing means to said secondary drive shaft and to said main drive shaft to said rotor system to enable said rotary wing wing aircraft to accomplish an autorotative descent to a no-damage landing.

4,609,166

EMERGENCY OXYGEN SYSTEM FOR AIRCRAFT

Edward J. Brennan, Litchfield, Conn., assignor to PTC Aerospace Inc., Bantam, Conn.

Filed Feb. 8, 1985, Ser. No. 699,649
Int. Cl.[4] B64D *13/00*
U.S. Cl. 244—118.5 **9 Claims**



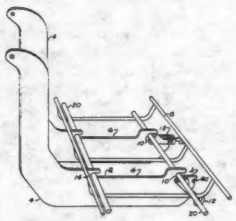
1. In an emergency oxygen system for an aircraft of the type having a plurality of oxygen masks normally stored in a mask compartment located behind a normally locked door in an upper rear portion of the back of one seat position of a multi-passenger seating unit, said seating unit having a chassis for supporting seat cushion means for each seat position of said seating unit and at least said back of said one seat position, the improvement wherein a generator compartment for containing an oxygen generating canister is attached to said chassis at a remote location relative to said mask compartment, said generator compartment being positioned at least substantially under the plane of said seat cushion means, said generator compartment housing both an oxygen generator canister positioned therein and a first release mechanism for activating said canister to produce oxygen, a plurality of oxygen flow tubes being joined at their opposite ends to said canister and to said plurality of oxygen masks, and a control cable assembly including a longitudinally movable control wire extending between said mask compartment and said generator compartment, said control wire being attached to said first release mechanism at its lower end and to a second release mechanism at its upper end, said control wire being operable at its said lower end to activate said first release mechanism so as to cause oxygen to be generated by said generator and to flow to said oxygen masks when its said upper end is moved longitudinally by a force applies to it by said second release mechanism in response to a pulling force applied to a mask by a passenger, said masks including a tether member which actuates said second release mechanism when pulled.

4,609,167

HELICOPTER CARGO RACK

Edward H. Dean, and Burnley R. Doxey, both of Newport News, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 5, 1984, Ser. No. 668,456
Int. Cl.[4] B64D *11/00*
U.S. Cl. 244—137 A **3 Claims**



1. A helicopter cargo carrier wherein a load is carried by a tubular supporting frame with at least a pair of tubes thereacross comprising the combination of a plurality of rigid arms capable of being attahed to cargo attachment points in a helicopter fuselage and having extensions extending outwardly substantially horizontally therefrom, each arm extension having, relative to the fuselage, an inner and an outer hook-shaped jaw with a recess adapted to mate with a supporting frame tube, the inner and outer jaws being spaced to receive the pair of similarly spaced supporting frame tubes to be retained thereby, said tubes of said supporting frame being removable only in a horizontal direction, and a quick release mechanism restraining said horizontal movement, locking the supporting frame in the arms.

4,609,168

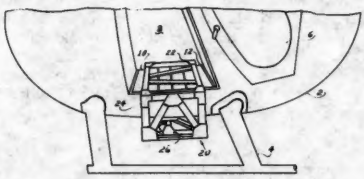
REMOVABLE HELICOPTER EXTERNAL CARGO CARRYING FRAMEWORK

Edward H. Dean; Burnley R. Doxey; Daniel T. Diebler, and Charles F. Swats, all of Newport News, Va., assignors to The United States of America as represented by the Secretary of the Army, Alexandria, Va.

Filed Nov. 26, 1984, Ser. No. 674,807
Int. Cl.[4] B64D *9/00*
U.S. Cl. 244—137 A **8 Claims**

1. In a helicopter having a cargo section with doors and a cargo deck floor, hat section cargo-tie-down points, jack point fittings in its fuselage beneath its cargo doors, and a cargo hook attachment point in its fuselage bottom, the combination of (A) a self-contained, external cargo-carrying framework, with (B) framework attachment means and with (C) stabilization means in the form of a clamping mechanism securing under tension the framework to jack point fittings to achieve said stability, wherein the external cargo-carrying framework (A) includes (1) a yoke adapted to rest on the cargo deck to straddle the cargo section and to extend through the cargo door openings,

entailing a top assembly in the form of a reinforced frame fitting the cargo section and having detachably bolted yoke side frames depending perpendicularly therefrom, outside the helicopter completing the yoke, (2) a bottom frame structure, (3) quick disconnect pin means for attaching the bottom frame



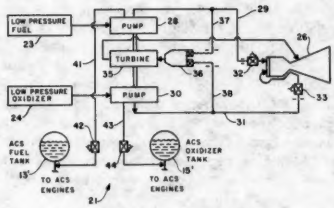
structure to the yoke side frames beneath the fuselage adjacent the cargo hook attachment point, (4) means for attaching the bolted side frames to the jack point fittings, (5) means for attaching the bottom frame structure to the cargo hook attachment point, and (6) means on the side frames for attachment thereto of a cargo carrying device.

4,609,169

PROPELLANT TANK RESUPPLY SYSTEM

Thomas F. Schweickert, Collinsville, Ill., and George F. Orton, St. Louis, Mo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 14, 1984, Ser. No. 640,636
Int. Cl.[4] B64D *37/14*; B64G *1/26*
U.S. Cl. 244—169 **6 Claims**



1. In an attitude control system for a spacecraft or the like having a primary propulsion system including at least one primary engine, a source of fuel and a source of oxidizer, and separate fuel pump means and oxidizer pump means for pressurizing fuel and oxidizer for burning in said at least one primary engine, said attitude control system including at least one thruster engine and a pressurized fuel supply tank and a pressurized oxidizer supply tank for supplying fuel and oxidizer to said thruster engine, an improvement, comprising:

a. first conduit means operatively connected at one end to the outlet of said fuel pump means and at the other end to the thruster engine fuel supply tank;

b. second conduit means operatively connected at one end to the outlet of said oxidizer pump means and at the other end to the thruster engine oxidizer supply tank; and

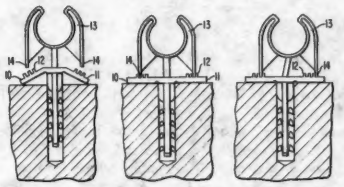
c. control valve means within each said first and second conduit means for controllably diverting, respectively, fuel and oxidizer under pressure from said fuel and oxidizer pump means to said thruster engine fuel and oxidizer supply tanks during operation of said at least one primary engine whereby the thruster engine fuel and oxidizer supply tanks are resupplied under pressure during said operation of said at least one primary engine.

4,609,170

FASTENING ELEMENT

Ludwig Schnabl, No. 19 Venusberger Strasse, A-3133 Traismauer, Austria

Filed Oct. 4, 1983, Ser. No. 538,997
Claims priority, application Austria, Oct. 4, 1982, 3661/82
Int. Cl.[4] F16B *15/00*
U.S. Cl. 248—71 **11 Claims**



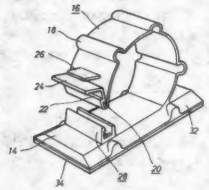
1. A fastening element, in particular intended for the fastening or installation of pipes or cables on a wall or ceiling, having a stem provided with spreaders on an outer surface of the stem for providing a positive connection with the wall of a bore hole, characterized in that each spreader comprises an eccentric (2, 2', 2'', 2''') formed integrally with the stem and connected to the stem by a thin flexible connection with a center of rotation positioned near the stem surface (1) and having an eccentric face (3) so that a distance from the center of rotation to a point on the eccentric face in a plane transverse to the stem and passing through the center of rotation increases on pulling the fastening element with respect to the bore hole, and wherein said eccentric surface is convex.

4,609,171

ELECTRIC WIRE BUNDLE CLAMP

Kazuhiro Matsui, Toyoake, Japan, assignor to Kitagawa Industries Co., Ltd., Nagoya, Japan

Filed Aug. 16, 1984, Ser. No. 641,192
Claims priority, application Japan, Sep. 5, 1983, 58-137708[U]; Oct. 14, 1983, 58-192675
Int. Cl.[4] F16L *3/08*
U.S. Cl. 248—74.3 **16 Claims**



1. An electric wire bundle clamp comprising:

a mounting base;

an elastic member having one end extending from a surface of said base;

a substantially V-shaped bent portion having two substantially parallel legs and defining another end of said elastic member, one said leg of said V-shape forming an extension of the length of said elastic member, the other said leg of said V-shape having a first retaining projection extending therefrom;

a clamp operating piece extending from said other leg of said V-shape;

first and second projecting portions extending from said surface of said base, said first and second projecting portions being mutually spaced by a distance sufficient that said V-shaped bent portion can be inserted therebetween; and

a second retaining projection extending from said first pro-

jection portion at a position such that said first and second retaining projections may engage one another when said V-shaped bent portion is inserted between said first and second projecting portions, wherein said clamp operating piece is mounted on said V-shaped bent portion such that said first and second projecting portions are released upon the application of pressure on said clamp operating piece in an opening direction away from a base of said bent portion.

4,609,172

SHELF BRACKET AND COOPERABLE LOCKING BRACKET RETAINER

Steven C. Dorner, 5322 Fair Elms Ave., Western Springs, Ill. 60558

Continuation-in-part of Ser. No. 503,668, Jun. 13, 1983, Pat. No. 4,534,529. This application Jan. 31, 1985, Ser. No. 696,654

The portion of the term of this patent subsequent to Aug. 13, 2002, has been disclaimed.

Int. Cl.⁴ F16L *3/08*

U.S. Cl. 248—222.1 **7 Claims**

1. In combination, a bracket, at least one member to be clamped to said bracket and a retainer, said bracket comprising a proximal end, a distal end, an edge, and

recess means defining a recess in said edge between said proximal end and said distal end for receiving said member including at least one first recess edge and a second recess edge extending at a predetermined angle to and facing said first recess edge, and

said retainer comprising a wedge-shaped member including a first surface for engaging said at least one member and a second surface extending at said predetermined angle with respect to said first surface for engaging said second recess edge to clamp said member between said first recess edge and said first surface as said retainer is forced into the recess.

4,609,173

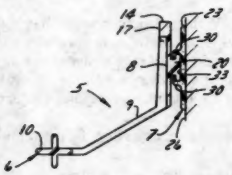
MAGNETICALLY ATTACHABLE TOWEL HANGER

Martin P. Belokin, Denton, Tex., assignor to Martin-Paul, Inc., Denton, Tex.

Filed Oct. 1, 1984, Ser. No. 656,249

Int. Cl.⁴ A47B *96/06*

U.S. Cl. 248—225.1 **2 Claims**



1. A hanger for towels and the like that is readily securable to an upright supporting surface and is readily removable therefrom without leaving a trace, said hanger comprising:

A. a hanger member comprising

(1) an elongated back plate having opposite longitudinal edges and having a substantially flat rear surface and an opposite front surface,

(2) support means connected to the back plate near opposite ends thereof and projecting forwardly beyond its front surface, and

(3) a pair of elongated retaining flanges on the rear of the back plate, extending lengthwise parallel to said longitudinal edges thereof and spaced laterally from those edges, said retaining flanges overlying said rear surface of the back plate in rearwardly spaced relation thereto and projecting edgewise in laterally opposite directions; and

B. an elongated, strip-like, one-piece supporting member of elastomeric material impregnated with magnetized material

(1) having opposite straight and parallel longitudinal edges,

(2) having opposite front and rear surfaces which are flat and substantailly parallel to one another across substantially the entire width of the supporting member between its said edges and between which the supporting member is thin enough to be substantially pliant for conformation to an upright metal supporting surface to which said rear surface of the supporting member can have flatwise overlying magnetic securement,

(3) having a length and width to be flatwise overlain by a substantially major portion of said rear surface of the back plate but to be concealed behind the back plate, and

(4) having a pair of elongated channels of L-shaped cross-section that extend lengthwise parallel to said longitudinal edges of the supporting member, each comprising a web portion which projects forwardly from the front surface of the supporting member and a supporting flange which projects laterally from said web portion and overlies that front surface in forwardly spaced relation thereto, the supporting flanges of said channels projecting edgewise in laterally opposite directions and being lengthwise slidably interengageable with said retaining flanges, said channels being spaced laterally inwardly by substantial distances from said longitudinal edges of the supporting member and being spaced from one another so that there is a substantial pliant portion of the supporting member between the channels and each of those edges and between the two channels.

4,609,174

FOLDABLE EASEL

Koma Nakatani, 12-17 chome Nakai, Shinjuku-ku Tokyo, Japan (161)

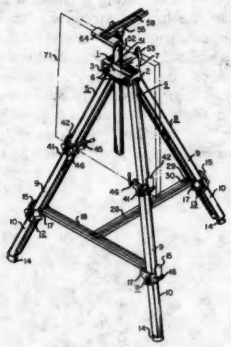
Filed Nov. 5, 1984, Ser. No. 668,471

Int. Cl.⁴ A47B *97/04*

U.S. Cl. 248—465 **9 Claims**

1. A folding easel having three legs, each leg having an upper end and a lower end, each leg being pivotably interconnected at its upper end to a pivot head to allow pivotal movement of a first and a second leg in a common plane between a folded mutually parallel position and a spaced apart position, a third leg being movable away from said first and second legs in a plane perpendicular to said common plate, each of said legs comprising at least two telescopically slideable leg sections and a first leg lock for securing said leg sections at an arbitrarily extended position against telescoping movement, each said first leg lock including a lock mounting socket, each said socket supporting an axle disposed transversely to said leg, a first rigid tie-bar pivotably attached at one end to said axle on said first leg for movement between a folded and an extended position, the free opposite end of said first tie-bar being releasably engageable in its extended position to said axle on said second leg, and a second rigid tie-bar pivotably attached at one end to said axle on said third leg for movement between a

folded position and an extended position, the opposite free end of said second tie-bar in its extended position being releasably engageable to an intermediate point of said first tie-bar thereby to secure said three legs in fixed spaced apart relationship with said two tie-bars forming a figure T usable as a shelf support for paint boxes or the like;



said free ends of both first and second tie-bars being engageable respectively to said axle and said intermediate point by a snap locking engagement readily disengageable without removal of fasteners.

4,609,175

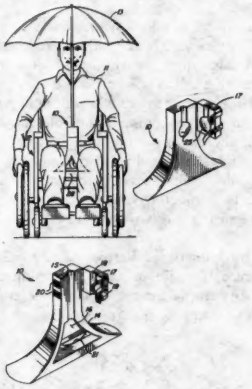
LEG-SUPPORTED UMBRELLA HOLDER

Lynn Conover, 1028 Manzanita Dr., Phoenix, Ariz. 85020

Filed Jul. 16, 1984, Ser. No. 631,149

Int. Cl.[4] A47G *25/12*

U.S. Cl. 248—519 **9 Claims**



1. A leg supported umbrella holder comprising:

a base suitable for support upon a generally horizontal surface such as a chair seat, the floor, a tabletop, or the like, and for grasping by the thighs of a person seated in a chair when said base is resting upon a chair seat;

the front and back walls of the base being substantially vertical with a thickness therebetween sufficiently narrow so as to easily slide between a seated persons thighs, and with the sides of the base being substantially concave and tapering from substantially the full width of the base to a narrower upstanding portion so as to be grasped by the thighs of a seated person when turned transverse thereto;

a groove within said upstanding portion for matingly coupling with an umbrella shaft, adjacent its handle end, for holding an umbrella in a generally upright position;

clamping means coupled to said base for maintaining an umbrella shaft matingly coupled to said groove; and

a void within said base adjacent said groove for receiving one of umbrella handles of various configurations as may be affixed to an umbrella shaft matingly coupled to said groove.

4,609,176

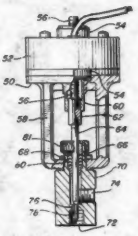
FLUID FLOW CONTROL SYSTEM WITH PULSE DRIVEN ELECTRIC CONTROL VALVE

William H. Powers, Tulsa, Okla., assignor to Badger Meter, Inc., Milwaukee, Wis.

Filed Apr. 20, 1984, Ser. No. 602,653

Int. Cl.[4] F16K *31/12*

U.S. Cl. 251—30.04 **13 Claims**



1. A fluid flow control system comprising: means positionable in response to the pressure of a control fluid for controlling the flow of another fluid; means for supplying control fluid at a predetermined rate; a conduit connecting said supplying means to said controlling means; a bypass connected to said conduit and including a control valve having a variable orifice; said valve comprising a housing with inlet and outlet fluid flow fittings and defining an orifice passageway therebetween, and a spool portion reciprocally adjustable within said passageway; and an electrical stepping motor including a rotor portion; said spool portion being attached to an element having threaded engagement with said rotor portion of said motor whereby said spool portion is adjusted axially as said motor is stepped, and said spool portion being shaped to vary the effective size of the orifice defined by said passageway and spool portion as said spool portion is reciprocated by said motor in response to electrical control pulses to said motor, whereby the flow of such control fluid from said supplying means through said bypass is controlled by applying electrical pulses to said motor to thereby selectively position said controlling means.

4,609,177

VALVE

Larry G. Turner, Clarkston; Leo S. Stanish, Grosse Pointe Woods; Manfred Kuttruff; Walter J. Budzinski, both of Sterling Heights, all of Mich., and Robert MacDonald, Phoenix, Ariz., assignors to Brasscraft Manufacturing Company, Southfield, Mich.

Continuation-in-part of Ser. No. 713,136, Mar. 18, 1985, Pat. No. 4,562,994. This application Oct. 17, 1985, Ser. No. 788,319

Int. Cl.[4] F16K *25/00*

U.S. Cl. 251—175 **12 Claims**

1. A plumbing valve comprising:

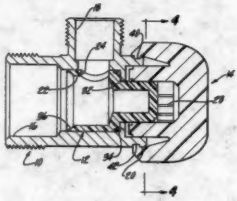
a valve body having an inlet bore and and outlet bore;

a resilient control sleeve located within said valve body for rotation therein, said sleeve being open at one axial end and closed at the other axial end, and having a side wall of circular cross-section between said ends, said side wall having at least one port;

said control sleeve side wall having a first portion contoured and dimensioned to be snuggly but rotatably received within a sleeve receiving bore of said valve body, said valve body sleeve bore communicating with both said inlet and said outlet bores;

a handle connected to said closed end of said control sleeve for rotating said control sleeve between a closed position of the valve, wherein said side wall blocks communication between said inlet and outlet bores, thereby preventing fluid from flowing through the valve, and an open position of the valve wherein a flow path is established between said inlet and outlet bores via said port and the interior of said control sleeve;

said valve body and said control sleeve being constructed to maintain continuous communication between said inlet bore and the interior of said control sleeve, to thereby pressurize said interior and resiliently bias said side wall radially outwardly against said valve body sleeve bore;



said valve body sleeve bore having a collar portion of smaller internal diameter than the adjacent portions of said valve body sleeve bore on each side of said collar, said diameter of said collar portion also being less than said outer diameter of said first portion of said control sleeve, whereby said collar acts as a stop to limit axial travel of said control sleeve along the length of said valve body sleeve bore;

said first portion of said control sleeve having a circumferential groove and a circumferential sealing flap located between said groove and said collar portion, said sealing flap having an outer diameter greater than the internal diameter of the opposed portion of said valve body sleeve bore and contoured to pivot radially inwardly and axially toward said open end of said sleeve bore and partially into said circumferential groove as a result of the interference fit with the walls of said valve body sleeve bore.

4,609,178

DIAPHRAGM TYPE CONTROL VALVE

Hans D. Baumann, 32 Pine St., Rye, N.H. 03870

Continuation-in-part of Ser. No. 576,362, Feb. 2, 1984, Pat. No. 4,549,719. This application Jun. 20, 1985, Ser. No. 746,834

Int. Cl.[4] F16K *7/16, 31/524*

U.S. Cl. 251—229 **5 Claims**

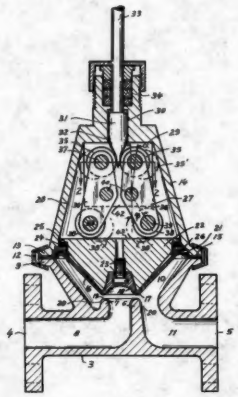
1. Diaphragm Type Control Valve comprising:

(a) a valve housing one inlet and one outlet port, a cavity extending towards the top of said valve housing, a valve orifice centrally located within said cavity, a passage connecting said cavity towards one of the ports, a second passage connecting the other port to said valve orifice, a flanged opening forming the upper terminating end of said valve housing, and extending above said valve orifice;

(b) a flexible diaphragm suitably connected to said flanged opening capable of sealingly interacting with said valve orifice;

(c) a valve bonnet having a central opening terminating in a lower flanged portion capable of connecting against said diaphragm, said central opening is further reduced in diameter near the top of the bonnet and retaining within a slidable stem;

(d) a mechanical amplifying means retained within the central opening of said valve bonnet and capable of translating a larger vertical displacement of said slidable stem into a smaller vertical motion of said diaphragm and comprising one pair of identical toggle elements mounted in spaced relationship between a pair of opposed parallel outer plates whose upper terminating surfaces extend above the upper extremity of said pair of toggle elements and whose lower terminating surfaces are shortened in relationship to the lower extremity of said toggle elements, each of said toggle means pivotably supported by shaft means which are suitably retained within said pair of outer plates, each of said toggle elements comprising one or more upper bearings suitably supported above said shaft means and between a pair of opposed parallel inner plates, and one or more lower bearings suitably and rotably supported below said shaft means and between the



same pair of inner plates whose outer periphery does not exceed that of the bearings, the geometric relationship between said upper bearing, said shaft means and said lower bearing is that of an obtuse triangle, and wherein said slidable stem is capable of sliding between said pair of outer plates and engaging and displacing said upper bearings and thereby pivoting said pair of toggle elements around said shaft means, said pivoting motion further causing said lower bearings to extend their co-sinusidal distance in respect to the supporting shaft means and thereby causing a downward motion of said lower bearings;

(e) a plunger interspaced between said mechanical amplifying means and said diaphragm, said plunger being able to tansmit any displacement of said mechanical amplifying means on to said diaphragm.

4,609,179

SCREW JACK

Shinn I. Chern, No. 1, Lane 624, Sha Tien Road, Sec. 3, and Yih K. Jwo, No. 825, Sha Tien Road, Sec. 3, both of Ta-Du Hsiung, Taichung Hsien, Taiwan

Filed May 23, 1985, Ser. No. 737,105

Claims priority, application Taiwan, Apr. 19, 1985, 6923888

Int. Cl.[4] B66F *3/10*

U.S. Cl. 254—102 **5 Claims**

1. A screw jack comprising:

a base;

a housing disposed on said base;

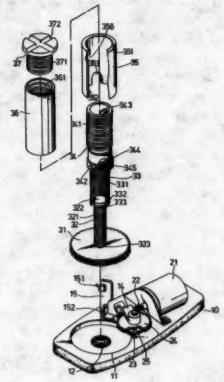
a motor mounted on said base;

a vertical screw rod mounted rotatably in said housing and driven by said motor;

a first threaded sleeve sleeved engagingly on said screw rod;

a second threaded sleeve sleeved engagingly around said first threaded sleeve;

a guide sleeve mounted movably around said second threaded sleeve, and having an engaging portion to engage with said second threaded sleeve and a protrusion projecting radially from its periphery;



a bracket member mounted in said housing and having an upper limit switch and a lower limit switch mounted at the upper and lower portions thereof and operatively connected to said motor, said upper limit switch stopping said motor from the raising operation when it is actuated by said protrusion of said guide sleeve, said lower limit switch stopping said motor from the lowering operation when it is actuated by the bottom side of said second threaded sleeve.

4,609,180

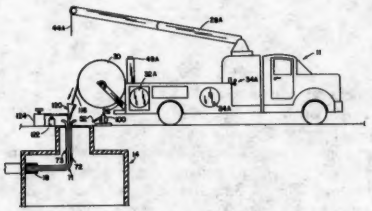
APPARATUS FOR PULLING OPTICAL FIBER CABLE

William C. Fisher, Bothell, and Jeffery T. Burns, Marysville, both of Wash., assignors to General Telephone Company of the Northwest, Everett, Wash.

Continuation of Ser. No. 644,100, Aug. 24, 1984, abandoned. This application Feb. 18, 1986, Ser. No. 830,911

Int. Cl.[4] B65H *59/00*

U.S. Cl. 254—134.3 R **6 Claims**



6. Apparatus for pulling at least 4000 feet of optical fiber cable having a tensile strength limit of approximately 600 lbs. through a continuous hollow tubular plastic subduct having a length of at least 4000 feet, said subduct having an entry end, an exit end and an inner surface, said cable having a lead end, said apparatus comprising;

tape means having a length greater than 4000 feet and a tensile strength greater than 600 lbs.;

a silicone lubricant;

lubricant applying means secured to said tape means and adapted to apply said lubricant to said inner surface of said subduct;

means for connecting said tape means to said lead end of said cable;

means for inserting said tape means in said subduct from said entry end to said exit end thereof;

means for injecting said lubricant into the entry end of said subduct immediately ahead of said applying means; and

means for unassistedly pulling said tape means and said cable through said length of said subduct with a pulling tension on said cable less than said tensile thereof.

4,609,181

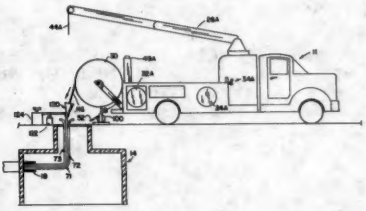
METHOD OF PULLING OPTICAL FIBER CABLE

William C. Fisher, Bothell, and Jeffery T. Burns, Marysville, both of Wash., assignors to General Telephone Company of the Northwest, Everett, Wash.

Continuation of Ser. No. 644,164, Aug. 24, 1984, abandoned. This application Feb. 18, 1986, Ser. No. 830,912

Int. Cl.[4] B65H *59/00*

U.S. Cl. 254—134.3 FT **9 Claims**



6. The method of pulling more than 4000 foot lengths optical fiber cable having a maximum predetermined tensile-strength limit through an underground duct means having a length greater than 4000 feet, said cable having a leading end, consisting of the steps of:

disposing within the entire length of said duct means a continuous plastic hollow tubular subduct having a length greater than 4000 feet and having an entry end and an exit end;

injecting into said subduct a liquid silicone lubricant;

applying said lubricant to an interior surface of said subduct; and

unassistedly pulling the leading end of said cable with a force less than said limit and moving said leading end thereof through the entire length of the subduct with a pulling-induced tensile force in the cable of less than said limit.

4,609,182

DEVICE FOR TENSIONING AND ALIGNING A FABRIC

Johannes Freermann, Ochtrup, Fed. Rep. of Germany, assignor to Carl Schmale GmbH & Co. KG, Ochtrup, Fed. Rep. of Germany

Filed Sep. 21, 1984, Ser. No. 653,506

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1983, 8327505[U]; Sep. 24, 1983, 8327506[U]; Aug. 24, 1984, 3431210

Int. Cl.[4] B26D *7/14;* **B25B** *25/00*

U.S. Cl. 254—228 **12 Claims**

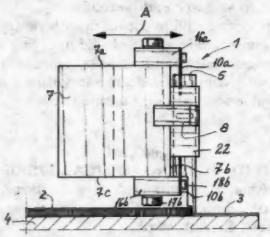
1. A device for tensioning and aligning a fabric, comprising:

a support member having a horizontal and a vertical axis, said support member being lowerable toward the fabric;

a plurality of tensioning segments arranged side by side in direction of said horizontal axis and acting on the fabric when said support member is in the lower position;

connecting means for attaching said tensioning segments to said support member in such a manner that each of said tensioning segments is individually and automatically

liftable in direction of said vertical axis, said connecting means attaching said tensioning segments to said support member in such manner that said tensioning segments are movable in a direction of said horizontal axis; and



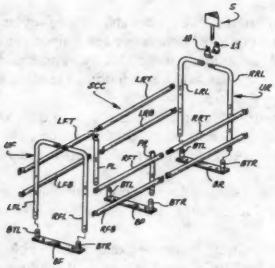
clamping means for fixing said tensioning segments in a predetermined position so as to prevent any movement thereof by pressing said tensioning segments against each other.

4,609,183

SHOPPING CART CORRAL KIT AND METHOD OF ASSEMBLING A CORRAL FROM THE COMPONENT PARTS OF THE KIT

Harrold Ulmer, Sunland, Calif., assignor to Whittar Industries, Ltd., Barrington, Ill.

Filed Sep. 7, 1984, Ser. No. 648,306
Int. Cl.[4] E04H *17/00*
U.S. Cl. 256—1 **12 Claims**



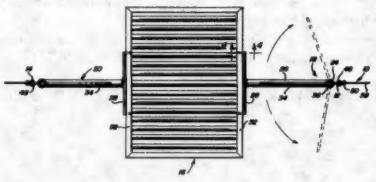
1. A kit for assembling a shopping cart corral having modular component parts capable of being readily assembled; the kit comprising two pairs of substantially L-shaped members, each of said L-shaped members having an end adapted to be interfitted within the same arm for another L-shaped member for defining a substantially U-shaped corral entry space therebetween to receive a shopping cart therein when the other arms of the interfitted L-shaped members are vertically arranged on a supporting surface, the interfitted L-shaped members having a length so that their combined interfitted lengths are greater than the width of a shopping cart for permitting a shopping cart to be readily pushed between the vertical arms of the interfitted L-shaped members for storage in the assembled corral, each L-shaped member having an arm defined with a vertical height at least greater than the height of a shopping cart when vertically arranged on a supporting surface, a pair of base elements, each base element having spaced upstanding posts adapted to be interfitted with the ends of the vertically extending arms of a pair of interfitted L-shaped members, each base element having a length so as to be extendable between the vertical arms of the interfitted L-shaped members when they are arranged for receiving said posts for vertically supporting the interfitted members by means of said posts on a supporting surface, a pair of post members having a vertical height selected to be less than the vertical height of the assembled L-shaped members and related to the height of a shopping cart for preventing engagement of a shopping cart stored within said assembled corral with a motor vehicle outside of the corral and adapted to be mounted intermediate the two pairs of assembled L-shaped members, a third base element, said base element having spaced upstanding posts adapted to be interfitted with an end of each post member, said third base element having a length so as to be extendable between the pair of vertically extending post members when the post members are arranged for receiving said posts for vertically supporting the post members, two side rails, each side rail being adapted to be secured adjacent the top end of a vertically supported post member and one of the vertical arms for each of the assembled L-shaped members arranged in alignment with the post member, two additional side rails adapted to be secured to said post and said one of the vertical arms for each of the assembled L-shaped members in a preselected spaced apart relationship below said first mentioned two side rails for preventing the protrusion of a shopping cart located within the corral beyond the confines of the assembled corral whereby said cart is not engageable with a motor vehicle outside of the corral, and four additional side rails, two of the side rails of said additional rails being adapted to be secured adjacent the top end of the other vertically supported post member and one of the vertical arms for the other assembled L-shaped members arranged in alignment with said other post member, the two remaining side rails of said additional side rails being adapted to be secured between said other post member and the other one of the vertical arms for each of the L-shaped members whereby said additional four rails are arranged in the same horizontal planes as said first mentioned four rails.

4,609,184

PIVOTED GRAVITY RETURN FENCE EXTENSION FOR CATTLE GUARD

Edwin C. Elkins, Sr., P.O. Box 208, Clearmont, Wyo. 82835

Filed Oct. 13, 1983, Ser. No. 541,416
Int. Cl.[4] A01K *3/00*
U.S. Cl. 256—14 **7 Claims**



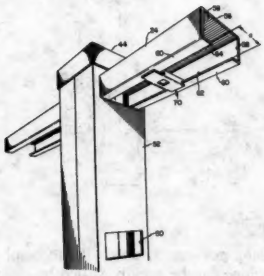
1. In combination with a fence line including a pair of spaced posts between which a wide fence opening is defined and wherein a narrow cattle guard of the type to allow unrestricted passage of automobile width vehicle thereover is substantially centered in said opening and spans considerably less than the width of said opening such that opposite sides of said guard are spaced along said opening from said posts, a pair of edge upstanding pannel-like wing closure members, pivot means pivotally mounting first corresponding upstanding base edge portions of said closure members for angular displacement, independent of interference with said cattle guard, about upstanding axes and with said closure members including second free swinging edge portions opposite said first edge portions swingable toward and away from closed positions with said second edge portions at least closely adjacent the opposite sides of the cattle guard and an upstanding plane containing said fence line opening, said pivot means including biasing means operative to yieldingly bias said wing closure members toward said closed position.

4,609,185

FENCE STRUCTURE AND METHOD FOR INSTALLATION

Ernest W. Prater, Irving, and Sidney M. Henry, Jr., Dallas, both of Tex., assignors to Southwest Metals, Inc., Carrollton, Tex.

Filed Jun. 25, 1984, Ser. No. 623,953
Int. Cl.[4] E04H *17/14*
U.S. Cl. 256—65 **11 Claims**



1. a rail and post fence structure comprising:

a post having an aperture therein for receiving one end of one said rail, said rail being tubular and having a longitudinal cutout in the wall thereof along a distance adjacent to the end thereof, said cutout defining confronting edges,

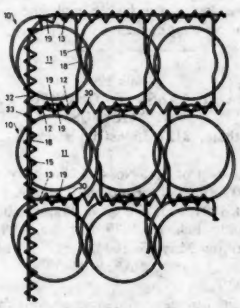
separator means for spreading the side walls of said rail into interference contact with said post by the insertion thereof in the aperture in said post, said separator means comprising a clip with a web and a pair of legs extending downwardly therefrom from opposing sides, said legs having slots extending inwardly from the opposite edges thereof for receiving the contronting edges of the rail to force the side walls of the rail in contact with the aperture in said post, said post aperture, said rail and longitudinal cutout, and said clip and legs thereof being dimensioned to provide an interference engagement between said rail and post aperture.

4,609,186

MATTRESS SPRING CORE WITH OPEN ENDED COILS

Alan Thoenen, St. Gallen, Switzerland, assignor to Spuhl AG, St. Gallen, Switzerland

Continuation of Ser. No. 507,361, Jun. 24, 1983, abandoned. This application Nov. 14, 1985, Ser. No. 798,142
Claims priority, application Switzerland, Jun. 28, 1982, 3957/82
Int. Cl.[4] F16F *3/04*
U.S. Cl. 267—91 **1 Claim**



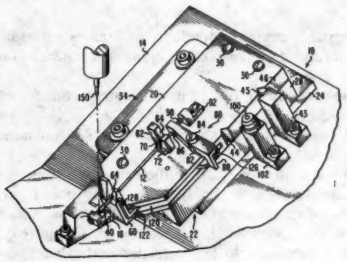
1. A spring core for a mattress, comprising: a plurality of identically configured helical circular coil springs (**10**) each made of a single, uninterrupted piece of wire having upper and lower final windings disposed in planes perpendicular to a spring axis, said springs being connected with each other at their final windings (**11**) by spiral shaped connecting elements (**30**) lying in said planes, each coil spring having open ended final windings which are approximately U-shaped, and the connecting elements fully enclosing straight lateral arms (**12, 13**) of the final windings, wherein the lateral arms of each final winding form a sharp right angle with an intermediate straight central arm (**18**), the central arm of each final winding overlies the helical circular coils (**15, 16**) of the associated spring in the manner of a secant, the lateral arms are substantially shorter than the central arms and lie radially outside of the helical circular coils, each lateral and central arm has a single outwardly directed bow-shaped bulge (**19**), a short length of end wire (**14**) at an outer lateral arm (**12**) of each final winding is bent at an approximate right angle to the outer lateral arm and runs parallel to the spring axis (**17**), all of the coil springs in a row running parallel to the connecting elements are equally aligned, and the coil springs of adjacent flanking rows are rotated 180° relative to the spring axes such that the enclosed lateral arms and central arms of the final windings define zig-zag patterns over upper and lower surfaces of the core to establish uniform surface densities.

4,609,187

POSITIONING APPARATUS

David W. Fairbanks, South Brunswick, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 2, 1984, Ser. No. 637,080
Int. Cl.[4] B25B *11/00*
U.S. Cl. 269—8 **6 Claims**



1. An apparatus for positioning and holding an elongated body during manufacturing thereof, wherein said elongated body includes a longitudinal axis and a magnetized region, said apparatus comprising:

a. an anvil for supporting an end portion of said elongated body;

b. a support plate selectively movable in a direction toward said anvil to a first position and away from said anvil to a second position;

c. means interactive with said elongated body for positioning thereof so that when said support plate is in said first position said end portion of said body is in supported engagement with said anvil, and when said support plate is in said second position said end portion of said body is spaced from said anvil, wherein said means for positioning said elongated body comprises:

c1. a positioning block attached to said support plate having a guide slot arranged to laterally align said longitudinal axis of sid elongated body with respect to said anvil;

c2. coupling means for rotationally aligning said elongated body about said longitudinal axis with respect to said anvil comprising a magnetic pole fixed with respect to said support plate and adapted to react with said magne-

tized region of said elongated body so that when said elongated body is in said guide slot of said positioning block said magnetized region will uniquely align itself with said magnetic pole;

c3. pusher means for axially aligning said elongated body along said longitudinal axis with respect to said anvil; and

c4. retaining means for retaining said elongated body within said positioning block.

4,609,188

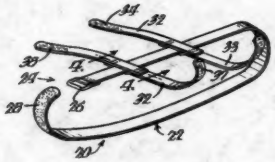
DEVICE FOR DOING SITUPS

Charles F. Lind, 2210 E. Sherwood, Arlington Hts., Ill. 60004

Filed Dec. 3, 1984, Ser. No. 677,695

Int. Cl.⁴ A63B *23/04*

U.S. Cl. 272—93 **2 Claims**



1. A portable device operable to assist an exerciser in doing situps and related exercises on an elongated generally horizontal board, comprising

a single board strap, and a pair of leg straps, one for each leg of an exerciser;

said straps being of strong and flexible, but nonelastic, material;

said board strap being of sufficient length to be wrapped transversely completely around the board, so as to extend crosswise to the length of the board, and to an exerciser who would be positioned, sitting or lying on the board with the legs extended in the direction of and along and over the board, for doing the exercises;

means to secure the opposite ends of the board strap together to hold the board strap wrapped in place firmly relative to the board,

means to secure each of the leg straps to the board strap to confine the leg strap laterally of the board strap while allowing movement of the leg strap axially along board strap;

each leg strap being adjusted by sliding axially along the board strap, on the upper side of the board, to be laterally aligned relative to a respective one of the legs of the exerciser, and

each leg strap having opposite end portions that

can be twisted one-quarter of a turn and brought adjacent the opposite sides of an ankle or foot of a respective leg of the exerciser, and

can be looped over the ankle or foot area of each respective leg of the exerciser, and can be overlapped on one another, and

means to releasibly secure together the two overlapped end portions of each leg strap as looped in place relative to the respective ankle or foot area of the exerciser,

operable to preclude the legs of the exerciser from lifting off of the board.

4,609,189

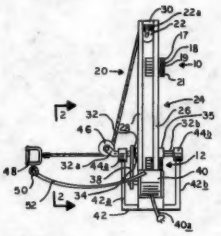
OPERATOR CONTROLLED VARIABLE FORCE EXERCISING MACHINE

Jerry W. Brasher, P.O. Box 15689, Baton Rouge, La. 70895

Filed Jul. 23, 1984, Ser. No. 633,619

Int. Cl.⁴ A63B *21/06*

U.S. Cl. 272—118 **9 Claims**



1. An exercising machine in which the force placed on the user of the machine can be rapidly varied by the user or another while the user is exercising with the machine comprising:

a. pivotal frame means holding movable exercising weight means, said pivotal frame means having an upper end and a lower end, said upper end having upper pulley means connected thereto for receiving movable cable means, said pivotal frame means having guide rail means upon which said movable exercising weight means are slidably received;

b. movable cable means connected to said movable exercising weight means;

c. output means connected to said movable cable means for applying the force applied to said movable cable means by said movable exercising weight means to the body of the user;

d. an axle rigidly connected to said lower end of said pivotal frame means for rotating said pivotal frame means in a vertical plane to change the force exerted by said movable exercising weights on said movable cable means, said axle having two ends, said axle means having bracket means rigidly connected to one end thereof, said bracket means having lower pulley means rotatably connected thereto to maintain the portion of said cable means extending from said lower pulley means to said output means at a constant length as said pivotal frame rotates on said axle;

e. stationary base means for rotatably supporting said axle and said pivotal frame means;

f. motor means for rotating said axle, said motor means being connected to said axle by drive means; and

g. switch means connected to said motor means for selectively actuating said motor means to rotate said pivotal frame means to a desired position and thereby change the force exerted on said movable cable means by said movable exercising weight means.

4,609,190

PHYSICAL FITNESS DIAGNOSTIC TESTING APPARATUS

Jerry D. Brentham, 2121 Industrial Park Rd., Belton, Tex. 76513

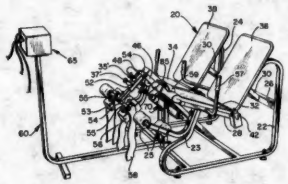
Continuation-in-part of Ser. No. 495,806, May 18, 1983, Pat. No. 4,566,691, which is a continuation-in-part of Ser. No. 285,257, Jul. 20, 1981, Pat. No. 4,448,412, which is a division of Ser. No. 12,874, Feb. 16, 1979, Pat. No. 4,291,787. This application May 25, 1984, Ser. No. 614,738

Int. Cl.⁴ A63B *21/00*

U.S. Cl. 272—130 **18 Claims**

1. An exercising device comprising: a frame for supporting a human body; a plurality of actuating means pivotally secured to said frame for engaging extremities of a human body; a first

and second double acting fluid actuated members connected between said frame and said actuating means; a piston in each said actuated member forming first and second chambers on opposite sides of said piston; means in fluid communication with said first and second chambers in each of said first and second fluid actuated members; first and second control means having a plurality of orifices of varying sizes formed therein;



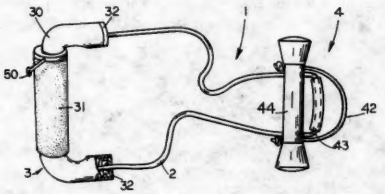
and selector means to selectively position the orifices of said first control means in communication with said first chamber of said first of the fluid actuated members and the orifices of the second control means in communication with said second chamber of said first fluid actuated member, said selector means being adapted to prevent flow of fluid from at least one of the chambers of the second fluid actuated member.

4,609,191

ARCHERS EXERCISER

LeRoy A. Remme, 8635 N. Clayton Ave., Neenah, Wis. 54956

Filed Sep. 23, 1983, Ser. No. 535,076
Int. Cl.[4] A63B *21/02*
U.S. Cl. 272—137 **3 Claims**



1. An exercise device of the type having opposing grips and a resilient element spanning the distance between the grips and comprising;

(1) a closed loop of slow recovery high hysteresis elastic material such as the urithane belting material supplied by Eagle Belting Co. of Des Plaines, Ill. and equivalents.

(2) a tubular grip simulator through which the belting is passed prior to forming the belting into a closed loop.

(3) a bow string simulator rod having a first end and a second end and the belting is passed through a hole in the rod near the first end and then back through a hole near the second end of the rod before the loop is closed,

(4) a bow string simulator having a first end and a second end and the first end of the bow string simulator is fastened to the first end of the simulator rod and the second end of the bow string simulator is fastened to the second end of the simulator, and rod, and

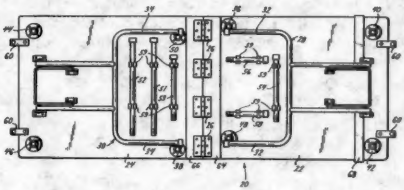
(5) the loop is closed to form a continuous belt by means of heat fusion, chemical fusion, and equivalent joining means.

4,609,192

COLLAPSIBLE PORTABLE EXERCISE TABLE

James E. Bratcher, Florissant, Mo., assignor to BratMek Company, Inc., Florissant, Mo.

Filed Aug. 1, 1984, Ser. No. 636,626
Int. Cl.[4] A63B *23/02*
U.S. Cl. 272—144 **17 Claims**



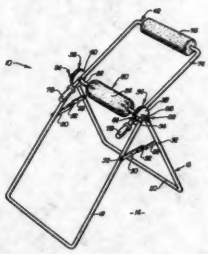
1. A multi-purpose, collapsible, portable exercise table, said table comprising a pair of padded table halves, a hinge means joining an end of each table half together so that as the table halves are folded open they are substantially aligned, a first group of table legs to support the table in a substantially planar and horizontal orientation, a second group of table legs to support the table in a substantially planar and inclined orientation, at least some of the legs being removable to permit said table to be alternatively supported in one or the other of its said orientations and to permit said table halves to be folded together about the hinge means when not in use, and at least one of said table halves having means to receive and hold said removable legs in a first orientation for supporting the table half and in a second orientation for storage, said removable table legs when in the stored orientation permitting said table halves to be folded together about the hinge means.

4,609,193

BACK AND GLUTEUS MAXIMUS EXERCISER

Win S. Paris, 28 Sea Cove Dr., Rancho Palos Verdes, Calif. 90274, and Russell Knipp, Santa Ana, Calif., assignors to Winn S. Paris, Torrance, Calif.

Filed Oct. 21, 1983, Ser. No. 544,353
Int. Cl.[4] A63B *00/00*
U.S. Cl. 272—145 **12 Claims**



1. A portable collapsible exercise device for suspending the human body above a support surface to decompress the spinal column while exercising the back extensor and abdominal muscles and for strengthening and toning the gluteus maximus muscles, said exercise device comprising:

a pair of U-shaped support members each have two side sections and a middle section, each side section having a free end and a ground end that is connected to said middle section, said middle section contacting the ground while in use;

means for pivotably connecting said support members to

each other so that said support members can be moved between a divergent supporting position and a substantially parallel collapsed position;

a pelvic brace for underpropping and supporting the body extending between said free ends of each of said support members;

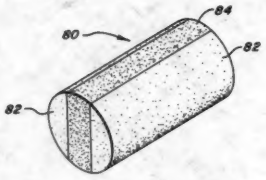
a U-shaped leg restraining member having two side sections and a middle section, each side section having a free end that includes a handle portion, rotatable about an axis defined by the points of connection of the pair of U-shaped support members between an in-use position in which it extends away from said support members and a storage position alongside said support members, said pelvic brace being supported on the two free ends of the U-shaped leg restraining members at points of attachment adjacent to said handles, said leg restraining member including a leg contact section parallel to said pelvic brace for applying a downwardly directed force to the backs of the user's legs; and locking means for securing said leg restraining member in a selected one of a plurality of positions to facilitate mounting, use and collapsibility of said device.

4,609,194

VIBRATION DAMPENING DEVICE FOR SPORTING RACKETS

Edward D. Krent, 207 Hampton Rd., Sharon, Mass. 02067, and Nicholas B. Paffett, 41 Thomas Park, Boston, Mass. 02127

Filed May 30, 1984, Ser. No. 615,310
Int. Cl.[4] A63B *49/00*
U.S. Cl. 273—73 D **4 Claims**



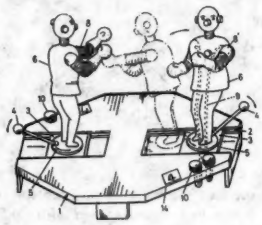
1. A device for dampening vibrations in the striking surface of a hand held sporting racket having strings, said dampening device comprising a block of highly resilient foam formed of two different foam materials, one material having a lower rebound property and a higher dampening property than the other of the materials, said block having a central portion and two outer portions, each of said central and outer portions extending between opposite ends of said block, said central portion being formed of said one material and said two outer portions being formed of said other material, said block being compressible for insertion between strings on the striking surface of the sporting racket.

4,609,195

MECHANICAL BOXING TOY

Yong S. Ham, Jangmi Apt. 12-1105, Shinchun-Dong, Kangnam-Ku, Seoul, Rep. of Korea

Filed May 20, 1985, Ser. No. 735,601
Claims priority, application Rep. of Korea, May 21, 1984, 4792
Int. Cl.[4] A63F *9/00*; A63H *13/06*
U.S. Cl. 273—85 F **4 Claims**



1. A mechanical boxing toy comprising:

a baseplate containing opposing circle plates, each circle plate being rotatably connected through a ball joint and spring means to moving plates, said moving plates being slidable toward and away from each other within said base plate,

two opposing mechanical boxing dolls containing flexible and extendable arms, said dolls being mounted on said circle plates,

handle means attached to said circle plates for sliding the dolls toward or away from each other and for rotating the dolls in place,

means for selectively supplying air to the arms of the dolls to extend the arms,

means for selectively raising and lowering the arms of the boxing dolls, and

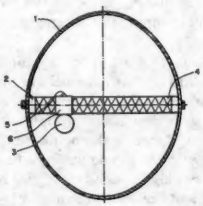
electric microswitches selectively located in the dolls for recording when contact is made between the respective dolls and counting the score between the respective dolls.

4,609,196

ZIG-ZAG BALL

Zoran Bozinovic, Zrmanjska St. No. 8/26, 11000 Belgrade, Yugoslavia

Filed Oct. 11, 1984, Ser. No. 660,434
Int. Cl.[4] A63B *71/00*
U.S. Cl. 273—128 A **2 Claims**



1. A ball which moves in a zig-zag manner when rolled comprising:

(a) a body,

(b) a shaft traversing two points at opposite sides of the body,

(c) left and right threads engraved on said shaft,

(d) a hollow cylinder slideably mounted on said shaft,

(e) a pin connected to said cylinder and slideably contacting said threads and

(f) a weight attached to said cylinder such that said weight, pin and threads cooperate to cause said cylinder to reciprocatingly traverse said shaft as said ball rolls.

4,609,197

GOLF PRACTICE DEVICE

George M. Vodin, 452 Creekwood Dr., Palatine, Ill. 60067

Filed Jan. 23, 1984, Ser. No. 572,906

Int. Cl.[4] A63B *69/36*

U.S. Cl. 273—184 B **18 Claims**

1. A golf practice device, comprising:

a golf ball,

an anchoring member having a passageway therein, and supporting the golf ball thereon,

a resilient cord being attached to said golf ball and extending into the passageway and being connected to the anchoring member within said passageway, for resiliently securing and mounting said golf ball to the top of said anchoring member, the resilience of the cord allowing the ball multidirectional movement away from the passageway,

an impact measuring device secured to said anchoring member,

connection cord means connected with said impact measuring device and extending into said passageway and being connected with said resilient cord at a location spaced below the upper end of said anchoring member therein.

4,609,198

RACKET HANDLE ASSEMBLY HAVING VIBRATION DAMPENING CHARACTERISTICS

Robert G. Tarr, 45 Arcturus Road, Highlands, Harare, Zimbabwe

Filed Nov. 8, 1983, Ser. No. 549,760

Int. Cl.[4] A63B *49/08*

U.S. Cl. 273—73 J **11 Claims**

1. A racket having a head and an adjustably dampened racket handle assembly for allowing the shocks induced from striking a ball with the head to be minimized while simultaneously controlling the hitting characteristics of the racket, said assembly including a main frame shaft depending from the racket head and means for controlling hitting characteristics of the racket and adjustably dampening shocks induced by striking a ball, said shaft having a longitudinal axis and a shaped lower portion, said controlling and dampening means including separate grip means removably attached to said shaft for providing a suitable hand grip for the racket, said grip means including a hollow interior shaped to be substantially complementary to the shaped lower portion of said main frame shaft and for receiving the shaped lower portion therein, tensioning means for adjustably securing said grip means and main frame shaft together, said tensioning means being movable relative to said grip means, and damping means for absorbing linear and rotational shocks positioned between and substantially along the mating surfaces of said grip means and main frame shaft so

that when tensioned by said tensioning means and with said damping means under compression, said main frame shaft remains movable within and relative to said grip means horizontally toward or away from and rotationally about the longitudinal axis of the shaft.

4,609,199

HAMMER-DRILL CHUCK WITH ADJUSTABLE AXIAL PLAY

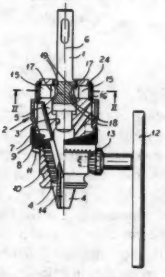
Günter H. Röhm, Heinrich-Röhm-Str. 50, 7927 Sonthiem, Fed. Rep. of Germany

Filed Feb. 15, 1985, Ser. No. 702,049

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1984, 3405980

Int. Cl.[4] B23B *31/12, 31/36*

U.S. Cl. 279—1 B **5 Claims**



1. A hammer-drill chuck for use with a drill bit having a rear end, the chuck comprising:

a tubular chuck body formed with a throughgoing passage centered on an axis and formed with a plurality of guides angularly spaced thereabout;

respective jaws displaceable along the guides between inner and outer positions;

an adjustment element displaceable on the body and coupled to the jaws for displacing same between their inner and outer positions, whereby the rear end of the drill bit can be fitted into the passage and gripped between the jaws;

a spindle centered on, rotatable about, and reciprocatable

through a predetermined stroke along the axis and having a front end projecting into the chuck body, whereby the rear end of the bit gripped by the jaws can be hammered by the front end of the spindle, the spindle being formed with an axially extending, radially outwardly open, and generally square-section groove having rounded axially opposite ends;

at least one coupling element radially but not axially or angularly displaceable in the chuck body and having a generally square section head fitting without play in the groove, the groove being between its ends of an axial length greater than that of the coupling head such that when the spindle reciprocates axially relative to the chuck body to engage the head with the rounded groove ends the coupling element is cammed by the rounded groove ends radially outward; and

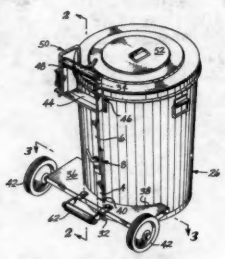
a spring member urging the coupling element radially inward against the formation.

4,609,200

DEVICE FOR AIDING IN THE COLLECTION, TRANSPORT AND DUMPING OF REFUSE

Anthony A. Winter, 1135 Tacoma Ave., Port Orchard, Wash. 98366

Filed Oct. 31, 1985, Ser. No. 793,397
Int. Cl.[4] B62B *1/14*
U.S. Cl. 280—5.2 **14 Claims**



1. A device for aiding in the collection, transport and dumping of refuse, comprising

means for attachment to a garbage can generally vertically abrest thereof to form an elongated strong back thereon,

said strong back having a pair of spaced handles thereon, operatively positioned adjacent the top and bottom of the can so that someone choosing to hoist the can for dumping, can grasp the strong back by the handles and lift the can by them to an elevation suited for dumping the refuse onto a truck or the like,

the strong back also having a pair of laterally spaced ground wheels mounted on the bottom portion thereof by which, with the strong back attached to it, the can can be converted into a hand truck that is rollable on the wheels from one site to another , and

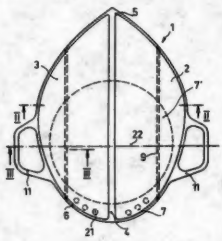
the bottom handle comprising a bracket and a roller mounted for rotation thereon, said roller being disposed in the space between the ground wheels at a position outlying the perimeter of said wheels so that it can be employed as a broad surfaced third wheel adapted to roll over the edge of steps or the like in preference to the ground wheels themselves.

4,609,201

SLIDING-VEHICLE, PARTICULARLY FOR SLIDING ON SNOW AND ICE

Jean-Paul Flachsmann, Am Schill, Oberwil, Switzerland (CH-6317)

PCT No. PCT/CH80/00088, § 371 Date May 1, 1981, § 102(e) Date May 1, 1981, PCT Pub. No. WO81/00698, PCT Pub. Date Mar. 19, 1981
Continuation of Ser. No. 261,214, May 1, 1981, abandoned. This PCT application Jul. 21, 1980, Ser. No. 591,245
Claims priority, application Switzerland, Sep. 11, 1979, 8230/79
Int. Cl.[4] B62B *13/16*
U.S. Cl. 280—20 **11 Claims**



1. A sliding vehicle, particularly a sled for sliding on ice and snow, having a longitudinally axis extending in the direction of sliding, comprising:

a bottom surface formed from two rigid shield sections conjointly defining a sliding surface;

seating means for a rider including a center and a transverse axis running through said center, arranged on said bottom surface so that said transverse axis is approximately perpendicular to said longitudinal axis;

at least one film hinge joint connecting said two shields, extending in a direction parallel to said longitudinal axis of said sled, said two shields being foldable thereabout;

handles substantially disposed across said transverse axis of said seating means at outside sides of said seating means; and

said two shields sections structured to mutually form at least one v-shaped groove for guiding said sled, said v-shaped groove extending in a direction parallel to said longitudinal axis of said sled, said v-shaped groove opening outward and diverging toward said sliding surface, and said film hinge joint forming the apex of said v-shaped groove.

4,609,202

TELESCOPIC FRONT SUSPENSION

Shinichi Miyakoshi; Toshifumi Yamamoto, and Yoshio Negishi, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1984, Ser. No. 616,745
Claims priority, application Japan, Jun. 3, 1983, 58-99101
Int. Cl.[4] B62K *11/00*
U.S. Cl. 280—276 **8 Claims**

1. A telescopic front suspension, comprising:

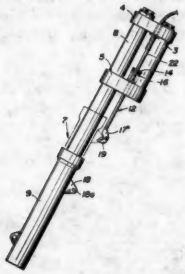
a bottom case supporting a front wheel of a vehicle;

a fork pipe slidably fitted in said bottom case;

resilient spring means for resisting telescopic action; and

restriction means readily available to an operator for restricting the amount of telescopic action, at a predeter-

mined degree of contraction between said bottom case and said fork pipe, the relative expansion between said



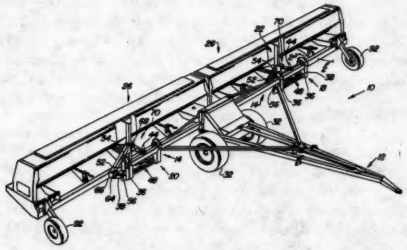
bottom case and said fork pipe, whereby the damping characteristics of the front suspension may be changed.

4,609,203

HITCH STRUCTURE WITH VARIABLE LINK

Ronald M. Steilen, Ankeny; John R. Myers, Polk City, and Vernon E. Rettig, Bondurant, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Aug. 30, 1985, Ser. No. 771,314
Int. Cl.[4] A01B *59/043;* B60D *1/04*
U.S. Cl. 280—461 A **19 Claims**



1. A three-point hitch for attaching an implement to a towing vehicle, comprising laterally spaced lower draft arms connected between the vehicle and the implement, an upper arm located between and above the lower draft arms pivotally connected to the implement and to the vehicle comprising a link, an extendable and retractable arm cylinder, and pivot means pivotally connecting the arm cylinder to the link, and means for selectively rendering the upper arm rigid or nonrigid to thereby selectively restrict or permit rocking of the connected implement relative to the vehicle including means for operating the cylinder to move the pivot means generally in line with the link and cylinder and thereby limit pivoting of the cylinder about the pivot means.

4,609,204

EXTENSION FOR OUTRIGGER BEAM

Randy A. Nekola, 2401 Lakesite Dr., Soddy, Tenn. 37379

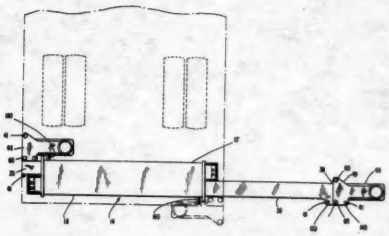
Filed Sep. 14, 1982, Ser. No. 418,081
Int. Cl.[4] B60S *9/12*
U.S. Cl. 280—766.1 **10 Claims**

1. An outrigger beam assembly for a highway transportable vehicle having a frame, such as a construction vehicle, comprising:

at least one telescopically extensible stage outrigger beam positioned beneath the frame, having a single stage and an outer end;

means for permanently mounting said outrigger beam on said frame so that said outrigger beam is telescopically extensible beyond an edge of said frame and telescopically retractable to a retracted position where said outer end is adjacent said edge, said permanently mounting means being fixed relative to said frame;

an extension beam connected to said outer end of said at least one outrigger beam and selectively pivotable with respect thereto about a vertical axis through an angle of substantially 180° between a working position where said extension beam is substantially colinear with said outrigger beam and a non-working position, said extension beam at



said non-working position is substantially within a peripheral contour of said vehicle when said outrigger beam is in said retracted position; and

securing means for securing said extension beam to said at least one outrigger beam in both said working and non-working positions wherein, in said working position, two horizontally spaced apart vertical hinge lines are formed by cooperating portions of said extension beam and said outrigger beam, one of said hinge lines being located on either side of a central axis of said outrigger beam and wherein said extension beam is pivoted around one of said hinge lines to bring said extension beam into said non-working position thereby spacing apart portions of said extension beam and said outrigger beam which cooperated to form said other hinge line.

4,609,205

SHOULDER BELT POSITIONER

Margaret L. McKeever, 1530 Sherwood, SE., Grand Rapids, Mich. 49506

Filed Sep. 26, 1985, Ser. No. 780,672
Int. Cl.[4] B60R *21/10*
U.S. Cl. 280—808 **20 Claims**

1. A safety belt positioner for vehicles and the like of the type having a door, a seat disposed adjacent to the door, and a shoulder belt having an extended, locked position in which the user is restrained in the vehicle seat, and a retracted, storage positicn in which the user is free to move out of and into the vehicle seat; said positioner comprising:

a flexible strap having first and second ends;

a hanger bracket connected with the first end of said strap, and shaped to removably support said positioner on the vehicle door at an interior side thereof;

an open hook connected with the second end of said strap, and shaped to releasably and selectively engage the shoulder belt; and

means for adjusting said positioner to a location wherein the shoulder belt is pulled slightly away from the shoulder of the user in the extended locked position for user comfort, and said open hook automatically releases the shoulder belt as the shoulder belt is moved into the retracted storage position, and bodily translates with the vehicle door as the door is opened to an out-of-the-way position to facilitate unobstructed exit from and entry into the vehicle seat.

4,609,206

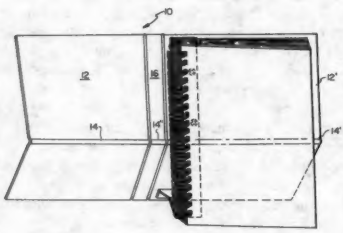
BOOK BINDER AND DISPLAY EASEL

Walter W. O'Brien, Box 99, R.D. #4, Angie Dr., Hopewell Junction, N.Y. 12533

Filed Aug. 8, 1985, Ser. No. 763,613

Int. Cl.[4] A47B *23/00*; B42D *1/00*

U.S. Cl. 281—33 **2 Claims**



1. A book binder, convertible to a display easel, comprising in combination therewith:

(A) front and rear covers, interconnected by a spine, said covers and spine having a horizontally disposed flexion divider, dividing top and bottom of the covers and spine into unequal segments, the top segment being of greater dimension than the bottom segments whereby the bottom segments of the binder and spine may be folded backwardly relative to the top segments thereof;

(B) a rigid hinge defining connected sections, a first section engaging the top of the rear cover and thus defining a rear cover anchor, interconnected second and third sections which are in extension of the first, the second and third sections being separated from the first and each other by a transverse indentation, thus defining a foldable strut which is in extension of said first section, said third section being interconnected by an extension at a free end thereof to the lower segment of the rear cover, all sections of the hinge being retained adjacent the rear cover at a position which is offset laterally from the interconnecting spine of the cover;

(C) a vertebrated spiral page retainer, said vertebrated retainer having fixed connection with the first section of the hinge at a portion which is centrally offset leftward of a centerline drawn vertically through the hinge, adjacent the spine of the covers.

4,609,207

METHOD OF TESTING A SECURITY AND A SECURITY FOR CARRYING OUT THIS METHOD

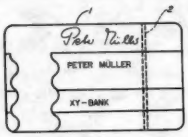
Hajo Muck, Dachau, and Wolfgang Becker, Neubiberg, both of Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 364,632, Apr. 2, 1982, abandoned, which is a continuation of Ser. No. 161,094, Jun. 19, 1980, abandoned. This application Jan. 9, 1985, Ser. No. 690,375

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925273

Int. Cl.[4] B42D *15/00*

U.S. Cl. 283—70 **14 Claims**



1. A method for determining the authenticity of a security paper having an authenticity portion, said authenticity portion being such as to allow measurement of a particular physical characteristic thereof by means of the application of a first type of field and also being such that said particular physical characteristic is itself modulated in a periodical manner by simultaneously applying a second type of field different from the first type of field, the intensity of said second type of field changing periodically; said method comprising the steps of applying the second type of field while modulating the intensity of said second type of field at a predetermined frequency to produce a corresponding modulation of said particular physical characteristic at said predetermined frequency, and measuring said particular physical characteristic indirectly as the change of the field intensity of the first type of field to determine modulations in said physical characteristic at said predetermined frequency produced by the second type of field and to thereby determine the authenticity of the security paper.

2. Apparatus for determining the authenticity of a security paper having an authenticity portion, said authenticity portion being such as to allow measurement of a particular physical characteristic thereof by means of the application of a first type of field and also being such that said particular physical characteristic is itself modulated in a periodical manner by simultaneously applying a second type of field different from the first type of field, the intensity of said second type of field changing periodically; said apparatus comprising first means for applying the second type of field to said security paper while modulating the intensity of said second type of field at a predetermined frequency to produce a corresponding modulation of said particular physical characteristic of said authenticity portion thereof, and second means including second field applying means for applying said first type of field to said authenticity portion, and means for measuring said particular physical characteristic of said authenticity portion indirectly as the modulation of the field intensity of the first type of field and to determine whether modulation at said predetermined frequency in said particular physical characteristic produced by the second type of field meets a predetermined standard and to thereby determine the authenticity of the security paper.

4. A security paper having an authenticity portion and being especially adapted to be tested for authenticity through the simultaneous application of first and second types of fields to said authenticity portion; said authenticity portion having a particular physical characteristic which is in a certain initial condition prior to application of said fields, which is modulated in a certain periodical manner and at a predetermined frequency, through the application of said second type of field

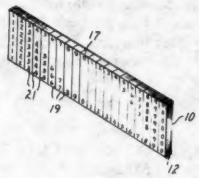
while modulating the intensity of said second type of field at said predetermined frequency and which is such as to then produce a certain measurable change in field intensity of said simultaneously applied first type of field at said predetermined frequency; the authenticity of said paper being verifiable by the production of said certain measurable change in field intensity of said first type of field while applying said second type of field with the intensity thereof being modulated at said predetermined frequency to modulate said physical characteristic in a periodical manner; said particular physical characteristic being such as to be returned to said initial condition after discontinuing the simultaneous application of said first and second types of fields.

4,609,208

WIRE IDENTIFICATION LABEL PAD

Norbert E. Wrobel, Marine, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 16, 1985, Ser. No. 776,593
Int. Cl.[4] B42D *15/00, 5/00;* B32B *33/00*
U.S. Cl. 283—81 **4 Claims**



1. A pad of wire identification labels, comprising:
a relatively stiff rectangular pad backing,
a multiplicity of rectangular layers of a pressure sensitive adhesive tape on said pad backing, said tape having a flexible opaque backing,
a narrow band of a release liner similarly adhered to the pressure sensitive adhesive surface of each layer of said tape along one edge thereof,
said layers of tape being slit into a multiplicity of long, narrow, parallel strips, the slits running perpendicular to said one edge of each tape layer and the edge parallel thereto and extending through the layers of tape and release liner, and
indicia on said layers of tape, each of said narrow strips of tape having a multiplicity of the same indicia spaced along its length.

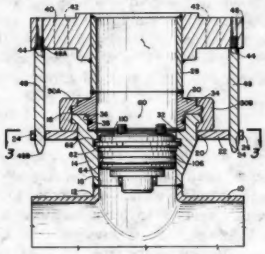
4,609,209

PRECISE ALIGNMENT ADAPTER FLANGE

Gene R. Ralls, Tulsa, Okla., assignor to T. D. Williamson, Inc., Tulsa, Okla.

Filed Nov. 7, 1983, Ser. No. 549,156
Int. Cl.[4] F16L *35/00*
U.S. Cl. 285—24 **3 Claims**

1. A quick coupling tubular connector having means for precise rotational alignment, comprising:
a first tubular flange member having an open end and having an enlarged integral external circumferential lip portion adjacent said open end;
a first alignment plate affixed to the exterior peripheral surface of said first tubular flange member and spaced from said circumferential lip portion, said lip portion being between said first alignment plate and said first flange member open end, the first alignment plate having at least one opening therein adjacent the plate peripheral edge;
a second tubular flange member having an open end and having an enlarged integral external circumferential lip portion adjacent said open end;
a second alignment plate affixed to the exterior peripheral surface of said second tubular flange member and spaced from said circumferential lip portion, said lip portion being between said second alignment plate and said second flange member open end;
at least one alignment bar extending from said second alignment plate adjacent the periphery thereof, each alignment bar extending parallel the tubular axis of said second tubular flange member and being receivable within a said opening in said first alignment plate whereby when said open ends of said first tubular flange member and said



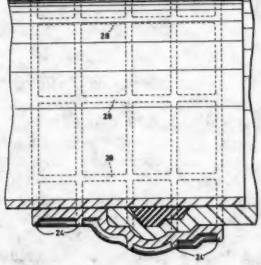
second tubular flange member are engaged, said alignment plates and alignment bars insure precise preselected rotational alignment of said tubular flange members, the alignment plate and alignment bar being dimensioned and positioned such that the alignment bar is displaced away from said lip portions of said first and second alignment plates; and
a clamp member having a C-shaped cross-sectional configuration for removably mating around said tubular flange member circumferential lip portions to secure said flange members together.

4,609,210

RESTRAINER DEVICE FOR COUPLINGS IN PIPELINES

Thomas E. Torokvei, Don Mills, and Wayne Lepp, Willowdale, both of Canada, assignors to Scepter Manufacturing Company Limited, Don Mills, Canada

Filed Jun. 20, 1985, Ser. No. 746,880
Int. Cl.[4] F16L *13/04*
U.S. Cl. 285—114 **2 Claims**



1. A thrust restrainer for ensuring the integrity of a joint between a plain ended synthetic plastic pipe and a fitting receiving the end of the pipe in sealing relationship, comprising two half sleeve components moulded from synthetic plastic

material, said half sleeves being mateable at mating surfaces to form a full sleeve, said half sleeves each having a first end portion having an internal configuration such as to snugly embrace a bell or flange of the fitting through 180° of its periphery, and a second end portion having semi-cylindrical internal configuration having a plurality of parallel peripheral sawtooth serrations, the minimum radius of the semi-cylindrical configuration at the peaks of the serrations being slightly less than the outside diameter of the pipe to be restrained, the half sleeves having internal longitudinal projecting flanges adjacent their mating surfaces, and bolts for securing said flanges together adjacent both said first and said second end portions, wherein the maximum radius of the semi-cylindrical configuration at the serrations is slightly greater than the external diameter of the pipe to be restrained, whereby the half sleeves are moulded from a material harder than that of the pipe to be strained and the material of the pipe displaced by the peaks of the serrations into the spaces between the serrations to form a rigid connection between the sleeve and the pipe, and wherein the semi-circular internal configuration includes semi-cylindrical lands axially adjacent the serrations on each side and each having a radius such as to embrace the pipe tightly, said radius being intermediate the respective radii of the peaks and valleys of the serrations whereby to control the engagement of the serrations with the pipe.

4,609,211

REMOTELY DISASSEMBLABLE CONNECTION DEVICE

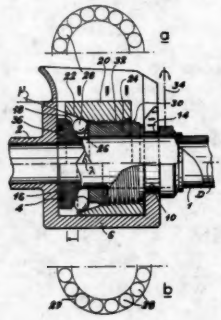
Claude Abbes, St. Etienne; Christian Rouaud, Bourg St. Andeol; Jean Valla, St. Etienne; Raymond de Villepoix, Donzére; Robert Demay, L'Hay les Roses, and Robert Forges, Bollene, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 20, 1984, Ser. No. 602,373

Claims priority, application France, Apr. 27, 1983, 83 06963

Int. Cl.⁴ F16L *19/02*

U.S. Cl. 285—325 **9 Claims**



1. A device for the tight connection of a first part to a second part in a direction along an axis D, incorporating means for linking said first and second parts in translation in direction along an axis O and means for compressing a gasket between said parts, wherein it also comprises a first member having a first conical surface at an angle λ with respect to the axis D, a second member having a second conical surface at an angle μ with respect to the axis D and a third member having a third planar surface perpendicular to axis D, said first, second and third surfaces defining a space, at least one radially movable intermediate member located within the space defined by said first, second and third surfaces, at least one of the three members being linked to the first or the second member, the device also having means for moving the first and second members relative to one another.

4,609,212

OIL OR GAS FIELD CASING

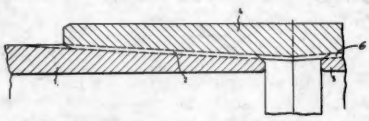
Armin Hosang, Kaarst, and Josef Versch, Neuss, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Apr. 9, 1982, Ser. No. 366,977

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1981, 3117696

Int. Cl.⁴ F16L *15/00*

U.S. Cl. 285—334 **4 Claims**



1. Large diameter casing for the oil and gas field industry with one or more free ending threads, the pipe having a tapered thread end;

an outer diameter exceeding 400 millimeters;

and a wall thickness of up to about 32 millimeters; the improvement comprising a thread pitch of 3.5 to two threads per inch and a cone taper in the range of 1 to 7.75 to 1 to 7.25.

4,609,213

PREFORMED BAND FOR USE IN COUPLING TUBULAR MEMBERS

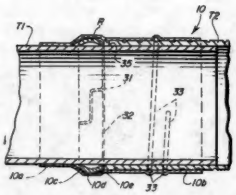
Stephen Tonchen, 405 N. Main St., P.O. Box 705, Kewanee, Ill. 61433

Continuation-in-part of Ser. No. 353,108, Aug. 21, 1984, Pat. No. 4,466,642. This application Sep. 30, 1982, Ser. No. 431,387

The portion of the term of this patent subsequent to Aug. 21, 2001, has been disclaimed.

Int. Cl.⁴ F16L *21/00*

U.S. Cl. 285—419 **9 Claims**



1. An assemblage of parts useful for coupling first and second tubular members having first and second tubular end portions with nominal diameters which lie within a predetermined diametric range, and having respective actual circumferential extents not less than respective first and second minimum circumferential values, so as to secure the first and second tubular end portions in axially aligned relation with a joint therebetween, said assemblage comprising:

(a) a strip of sheet metal with reinforced ends, and

(b) progressively adjustable force means for application to said reinforced ends when the strip is wrapped about the joint between said first and second tubular end portions so as to progressively tighten the strip about the joint, wherein the improvement comprises:

(c) said strip having a preformed arcuate bend therein intermediate the reinforced ends thereof providing first and second arcuate bend portions at opposite longitudinal sides of the strip and adapted to be placed in wrapping relation to portions of the circumference of said first and second tubular end portions,

(d) the strip having first and second longitudinal portions

extending longitudinally between the reinforced ends thereof and extending along the first and second arcuate bend portions with the length dimensions of the first and second longitudinal portions being less than the first and second minimum circumferential values,

(e) the sheet metal of the strip providing generally oppositely extending end portions extending in generally opposite directions from said arcuate bend portion, and providing reversely curved connecting portions extending between the oppositely extending end portions and the arcuate bend portion with the curvature of the connecting portions being opposite to the curvature of the arcuate bend portion, and

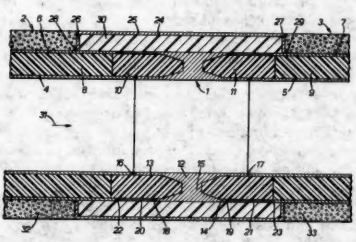
(f) the sheet metal of the oppositely extending end portions and of the reversely curved connecting portions being in a ductile hand-deformable condition so that the strip can be wrapped by hand about the first and second tubular end portions, the force means being thereafter applied to the reinforced ends so as to progressively tighten the strip into a stretched conforming relationship to the first and second tubular end portions and with the first and second longitudinal portions of the strip firmly gripping respectively the first and second tubular end portions to secure said tubular end portions in said axially aligned relation, wherein said first tubular end portion of said first tubular member has an inside diameter about equal to the outside diameter of said second tubular end portion of said second tubular member to telescopically fit thereon, said first and second arcuate bend portions of said strip being preformed to have first and second inside radial dimensions respectively, said first inside radial dimension being substantially greater than said second inside radial dimension.

4,609,214

THERMALLY INSULATED FLUID TRANSPORT LINE

Eric L. Bonjour, Rueil Malmaison, and Alain J. Rocaboy, Paris, both of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed Dec. 4, 1984, Ser. No. 678,150
Claims priority, application France, Jan. 9, 1984, 84 00200
Int. Cl.[4] F16L *11/12*
U.S. Cl. 285—47 **5 Claims**



1. A fluid transport line comprising an outer pipe (6, 7) and an inner pipe (4, 5) coaxial with outer pipe, said inner pipe being intended for transporting a fluid to be thermally insulated relative to the exterior of said line, said line being formed from a plurality of sections, each comprising an inner pipe portion and an outer pipe portion and succeeding one another axially, said inner pipe portions and said outer pipe portions of two successive sections being connected respectively to one another by a coupling means in a junction zone (1); said coupling means comprising:

a junction ring (12) comprising an inner ferrule (13) of the same inner and outer diameter as, and being sealably joined to, said inner pipe, and outer ferrule (14) of the same inner and outer diameter as, and being sealably joined to, said outer pipe and a central annular part (15) radially connecting said ferrules,

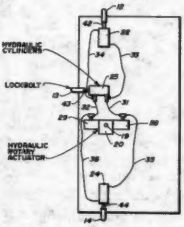
a shell means (24) arranged externally around said junction zone and terminating axially in end portions (26, 27) sealably joined (28, 29) to said outer pipe portion of each of said two successive sections, so as to provide a closed chamber (30) surrounding said junction zone and a thermally insulating medium in said closed chamber.

4,609,215

HYDRAULIC LOCKING BOLTWORK SYSTEM

Henry L. Self, Oxnard, and Teddy L. Pickett, Ventura, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 20, 1984, Ser. No. 642,289
Int. Cl.[4] E05B *47/00*
U.S. Cl. 292—144 **8 Claims**



1. An hydraulic locking boltwork security system with automatic secondary relocking capability for securing doors having a plurality of deadbolts, comprising:

a. a manually operated hydraulic pump means for forcing in and withdrawing hydraulic fluid from hydraulic circuit lines;

b. a plurality of hydraulic cylinder and piston devices connected via hydraulic circuit lines to said hydraulic pump means; said hydraulic cylinder and piston devices including piston drive rods operable to be moved outwardly and inwardly as hydraulic fluid is forced into and out of the hydraulic circuit lines by operation of said hydraulic pump means;

c. a plurality of deadbolt means each of which is associated with a respective one of the piston drive rods of said plurality of hydraulic cylinder and piston devices; said deadbolt means being mounted about the outer perimeter area of a door whereby said hydraulic pump means is operable to move said piston drive rods and deadbolt means in a first direction for locking the door and in a second direction for unlocking said door;

d. means included in said hydraulic circuit lines for maintaining constant hydraulic fluid pressure;

e. detection means included in at least one hydraulic circuit line for indicating hydraulic system tampering;

f. a first manually operated hydraulic valve lock means located in at least one of the hydraulic circuit lines for closing said hydraulic lines to hydraulic fluid flow; and

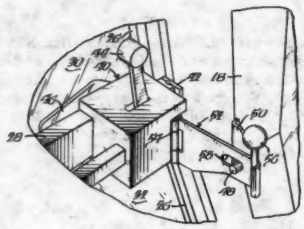
g. a secondary relocking means in at least one of said hydraulic circuit lines cooperating in conjunction with said detection means and which operates to close said hydraulic circuit lines for automatically locking the system upon detection by said detection means of an unauthorized change in hydraulic system pressure.

4,609,216

CAB DOOR STRUCTURE AND HOLD-OPEN MECHANISM

Joe L. Baker, Carman, Ill., and Thomas R. Brown, Yarmouth, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Jul. 2, 1984, Ser. No. 627,089
Int. Cl.[4] E05C *17/12*
U.S. Cl. 292—262 4 Claims



1. A door structure and hold-open mechanism for a material handling implement, comprising:

a door frame for mounting on said implement;

a cab door having hinge means hingedly mounting the door on said frame for swinging movement of the door between open and closed positions with respect to said frame;

hold-open latch means having pivotal mounting means for pivotally mounting the latch means on said door for manual movement of the latch means between active and inactive positions with respect to said door;

latch pin means fixedly mounted on said frame in a position for engagement with said hold-open latch means in the active position thereof for maintaining said door in a partially opened position between said open position and said closed position;

said hold-open latch means defining an opening positioned for receiving and engaging said latch pin means only when said hold-open latch means is in said active position and said door is in said partially opened position for maintaining said door in said partially opened position, said hold-open latch means being movable out of engagement with said latch pin means when said door is in said partially opened position;

door spring biasing means operatively connected to said door and said frame for moving and biasing said door outwardly from said closed position toward said open position; and

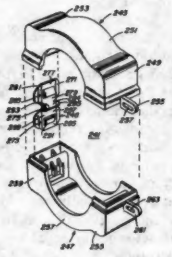
latch biasing means operatively connected to said latch means and said door for biasing said hold-open latch means toward said active position whereby said hold-open latch means is positionable in said active position when said door is in said closed position without disposition of said latch pin means in said opening, whereupon said hold-open latch means automatically receives said latch pin means in said opening when said door is moved by said door spring biasing means from said closed position toward said opened position, said door spring biasing means and said latch biasing means cooperating to maintain said latch pin means in engagement with said hold-open latch means.

4,609,217

TAMPER INDICATING COVER FOR A GAS METER

Anker J. Nielsen, Jr., 410 Bailey Rd., Holden, Mass. 01520, and George W. Davis, Warren, N.J., assignors to Anker J. Nielsen, Jr., Holden, Mass.

Continuation-in-part of Ser. No. 360,169, Mar. 22, 1982, Pat. No. 4,471,982. This application Aug. 8, 1983, Ser. No. 520,989
The portion of the term of this patent subsequent to Sep. 18, 2001, has been disclaimed.
Int. Cl.[4] B65D *33/34*
U.S. Cl. 292—307 B 14 Claims



1. A tamper indicating cover for use on a nut securing one end of a length of pipe to a port of a gas meter, said tamper indicating cover comprising:

a. first and second plastic, unitary structure, "C" shaped, cavity sections sized and shaped so as to loosely fit around said nut with one cavity section disposed on each side thereof, said first cavity section having a first end and a second end, said second cavity section having a first end and a second end, said first and second ends of said first cavity section being matable with said first and second ends, respectively, of said second cavity section, each cavity section having a clip receiving slot at each thereof,

b. an elongated hinge clip having a spring biased tongue element at each end thereof snap locked by the tongue element at one end into said slot in said second end of said first cavity section and by the tongue element at the other end to said slot in said second end of said second cavity section for locking together said second end of said first cavity section and said second end of said second cavity section, and

c. means attached to the first end of said first cavity section and said first end of said second cavity section for securing together said first end of said first cavity section and said first end of said second cavity section, said means comprising a clip snap locked at one end into said first end of said first cavity section and at the other end into said first end of said second cavity section for locking together said first end of said first cavity section and said first end of said second cavity section.

4,609,218

PLASTIC SEAL

Paul F. Chevillard, Terrebonne; Victor R. Tritton, and Gary E. Tritton, both of Pointe Claire, all of Canada, assignors to Les Enterprises Tritton LTEE, Montreal, Canada

Filed Dec. 14, 1983, Ser. No. 561,460
Claims priority, application Canada, Aug. 24, 1983, 435262
Int. Cl.[4] B65D *27/30, 33/34, 55/06*
U.S. Cl. 292—320 16 Claims

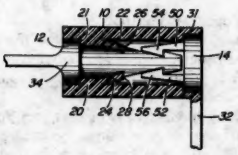
1. A locking seal comprising a socket member, a latch member and a locking cap member;

said socket member comprising a body having first and second open ends communicating with a hollow portion extending through said body; and at least one locking finger extending towards said second end of said body;

said latch member comprising an elongated locking end

adapted for insertion into said first end of said body; said locking end comprising a first section having a surface tapering into a second section and defining with said second section at least one first shoulder adapted to lockingly engage said at least one locking finger, said second section having a surface tapering into a third section and defining with said third section at least one second shoulder;

said locking cap member comprising a closure member adapted for insertion into said second end of said body to



prevent access to said second end, said locking cap member having locking means extending therefrom adapted to lockingly engage said at least one second shoulder;

whereby, when said latch member is inserted into said hollow portion of said body, said locking means of said locking cap member directly locks said at least one second shoulder of said locking end of said latch member, and said at least one locking finger of said socket member lockingly engages said at least one first shoulder of said locking end of said latch member, thereby providing dual locking of said latch member in place.

4,609,219

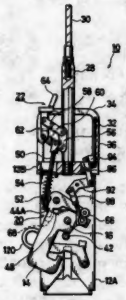
SUSPENSION GRAPPLE

Seitaro Go, Tsuruga, Japan, assignor to Yugen Kaisha Go Chuio Tekkosho, Tsuruga, Japan

Filed Mar. 20, 1984, Ser. No. 591,619

Int. Cl.⁴ B66C *1/34*

U.S. Cl. 294—82.24 **8 Claims**



1. A suspension grapple, comprising:

a housing;

a hook mounted to the housing for selective swinging movement into or out of engagement with an article to be lifted, the hook having a first groove formed therein;

a first lock means for automatically locking the hook in engagement with the article, the first lock means including a first lever rotatably mounted to the housing and having a claw formed at one end thereof, the first claw becoming engageable with the first groove of the hook to lock it in engagement with the article when the hook swings into such engagement with the article;

a manual operating mechanism for disabling the first lock means and for causing the hook to swing out of engagement with the article;

a second lock means for automatically locking the hook out of engagement with the article, the second locking means including a pawl mounted to the housing for rotation with the first lever, a ratchet rotatably mounted to the housing and having a groove formed therein for engagement by the pawl, and means for biasing the ratchet toward engagement with the pawl, the rotation of the first lever in one direction causing the pawl to rotate in the one direction to effect engagement with the ratchet whereby the pawl and accordingly the first lever are prevented from rotating in the other direction thereby locking the hook out of engagement with the article; and

an automatic release means for moving the ratchet away from engagement with the pawl to automatically disabling the second lock means in response to the grapple abutting the article in a predetermined positional relationship therebetween.

4,609,220

ARTIFICIAL HAND DEVICE

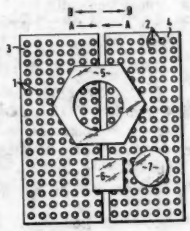
Peter B. Scott, Osterley Village, England, assignor to National Research Development Corporation, London, England

Filed Sep. 10, 1984, Ser. No. 648,968

Claims priority, application United Kingdom, Sep. 12, 1983, 8324368

Int. Cl.⁴ B65G *47/26*

U.S. Cl. 294—87.1 **5 Claims**



1. An artificial hand device comprising an assembly of substantially parallel pins mounted to be capable of axial movement, to conform to the profile of an object against which free ends of the pins are pressed, and of gripping the object sideways, the pins being mounted in two or more laterally movable carriers as a multiple row matrix, lateral surfaces of the pins being movable laterally to grip an object frictionally by lateral carrier movement.

4,609,221

PIVOTING REAR SEAT ARRANGEMENT

Curd Böttcher, Büttelborn, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 22, 1984, Ser. No. 592,447

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1983, 3312118

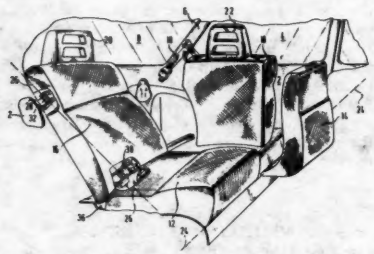
Int. Cl.⁴ B60N *1/06*

U.S. Cl. 296—65 R **1 Claim**

1. In a rear seat arrangement for a motor vehicle of the type including a seat cushion having a normal horizontal position on the vehicle floor defining a seat bottom and hingedly mounted for pivotal movement about an axis at the front end thereof for upward pivotal movement to a vertical stored position against the back of a front seat and having a split seat back having an upper portion and a lower portion and adapted for movement from a normal upright seating position to a stored position so as to provide increased cargo space, the improvement comprising:

upper pivot means acting between the motor vehicle side panel and the upper portion of the seat back and a lower pivot means acting between the vehicle floor and a lower portion of the seat back to define an upwardly extending pivot axis located adjacent the side panel of the vehicle by which the seat back is mounted for swinging movement between the normal upright seating position and upright stored position along the side panel of the vehicle body;

and said seat back having a top edge and having a normal



upright seating position in which the top edge is generally horizontal and the seat back angled somewhat rearwardly and the lower pivot means is located both forwardly of the upper pivot means and further inboard from the side panel of the vehicle body so that the upwardly extending pivot axis of seat back swinging movement is inclined both rearwardly and outwardly whereby the top edge of the seat back maintains a generally horizontal attitude when swingingly moved to the stored position along the side panel of the vehicle body.

4,609,222

OPEN ROOF-CONSTRUCTION FOR A VEHICLE

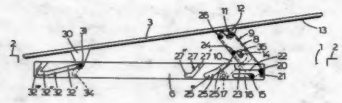
Robert T. Boots, Haarlem, Netherlands, assignor to Vermeulen-Hollandia Octrooien II B.V., Netherlands

Filed Apr. 26, 1984, Ser. No. 604,137

Claims priority, application Netherlands, May 6, 1983, 8301610

Int. Cl.[4] B60J *7/11*

U.S. Cl. 296—218 **23 Claims**



1. An open roof construction for a vehicle having a roof opening comprising:

a panel for closing said roof opening and having a front side, said panel having a closed-position, and being movable from said closed position only to a rearwardly and upwardly inclined ventilation position, said panel being returnable from said ventilation position to said closed position;

a stationary, substantially horizontal rail and a stationary support;

a slide plate movably engaged by said horizontal rail, and having a first horizontal guide slot and a second slot lying in front of said first slot, said second slot being open at the upper side and being at least partially inclined forwardly and downwardly;

a first transversally extending pivot shaft disposed at a preselected distance from said panel front end for displaceable supporting said panel;

a slide plate connection means for interconnecting said slide plate and said panel, said slide plate connection means having a link means with two legs; one leg of said two legs having an upper part pivotably engaging said first shaft, a lower part carrying a guide pin which engages said first guide slot in said plate, said first guide slot having a rear end engaged by said guide pin when said panel is in the ventilation position and a front end which is abutted by said guide pin when said panel is in said closed position; a second transverse pivot shaft for pivotably connecting a second leg of said two legs to the one leg at a position intermediate between said upper and lower parts;

said one leg being further provided with a first transverse pin, which lies at the same side of the one leg as the guide pin and which co-operates with the slot in the slide plate which is open at the upper side, the first transverse pin being completely clear of this slot in the ventilation position of the panel and enters this slot at the upper side in an intermediate position between the ventilation position and the closed position;

said second leg having a lower part carrying a third transverse shaft extending in a direction facing away from said slide plate, said third transverse shaft being pivotably connected to said stationary support, wherein the lower part of said one leg is disposed rearwardly from the lower part of said second leg, a portion of said one leg between said one leg lower part and said second shaft forming an angle with said second leg which is at a maximum in the rearwardly and downwardly position of the panel and at a minimum in the ventilation position of the panel; and

a pull-push means engaging said slide plate for moving said panel.

4,609,223

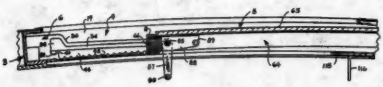
SUNROOF CONTROLLER

Laurence B. Haig, 841 Winslow Ct., Muskegon, Mich. 49441

Filed Nov. 14, 1983, Ser. No. 551,472

Int. Cl.[4] B60J *7/053, 7/185*

U.S. Cl. 296—222 **2 Claims**



1. A sunroof comprising:

a frame defining an opening:

a retractable closure shaped to selectively close said opening;

means for slidingly supporting said closure in said frame for generally horizontal translation between open and closed positions;

a releasable lock for adjustably retaining said closure in a selected, open position, including:

at least one track positioned in one of said frame and said closure, and extending along one side thereof in the direction of generally horizontal closure translation; said track including a slot with an upper surface, and a base, and having a longitudinal axis, and a height measured between said slot upper surface and said base;

at least one cam mechanism mounted in the other of said frame and said closure at a side thereof disposed adjacent to the one side of said one of said frame and said track; said cam mechanism including a drive shaft mounted rotatably and generally transversely in the other of said frame and said closure for axial rotation therein, and an eccentric fixedly mounted on an outer portion of said drive shaft and rotating therewith; said eccentric being received in said track between the slot upper surface and said base, and having a transverse axis with a width smaller than the height of said track, and a longitudinal axis with a length larger than the height of said track;

a plurality of recesses disposed in one of said slot upper surface and said base, and shaped to mate with an associated portion of said eccentric;

means for rotating said drive shaft axially between an unlocked position wherein the longitudinal axis of said eccentric is oriented substantially parallel with the longitudinal axis of said track to permit generally horizontal translation of said closure to a selected open position, and a locked position wherein the longitudinal axis of said eccentric is oriented substantially perpendicular to the longitudinal aixs of said track, and the associated portion of said eccentric is closely received in one of the recesses in said track to positively retain said closure in the selected, open position.

4,609,224

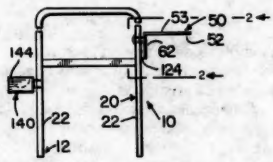
CHAIR TABLE

James P. Coggins, 3515 No. 64th Ave., Omaha, Nebr. 68104

Filed Mar. 25, 1983, Ser. No. 478,796

Int. Cl.[4] A47C *7/162*

U.S. Cl. 297—188 **19 Claims**



1. A chair table attachable to a chair having upwardly extending side frame portions, said table comprising: an article-supporting section having a substantially horizontal upper article-supporting surface, an attachment section connected to and upholding and extending downwardly from said supporting section and adjacent to one side of said supporting section, at least two horizontally spaced holding means having a cylindrical object receiving and holding capability, said holding means projecting from said one side of said attachment section, means connecting said holding means to said attachment section, said attachment section having at least four holes therethrough, said holding means connecting means extending through certain ones of said holes and being selectively extendable through various holes for ease of adjustment to chairs of varying frame shapes, two of said holes being spaced apart both vertically and horizontally with respect to each other for giving horizontally optional positions for the mounting of one of said holding means, a second two of said holes being spaced apart both vertically and horizontally with respect to each other and also being spaced apart horizontally with respect to said first two holes for the mounting of a second one of said holding means in horizontally spaced optional positions whereby wide versatility of chair fitting is made possible.

4,609,225

FOLDING CHAIR WITH MEMBRANE SHELL

Harry D. Loucks, 2901 Fair Park Blvd., Little Rock, Ark. 72204

Filed Jan. 17, 1985, Ser. No. 692,192

Int. Cl.[4] A47C *7/00*

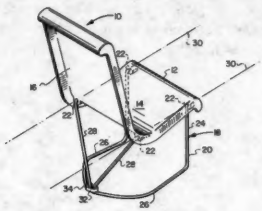
U.S. Cl. 297—440 **9 Claims**

1. A chair, comprising:

a support member having at least first and second support surfaces an aspect of each which is angled with respect to the other;

a first integral leg member comprising a forward upright, a rearward upright, and a runner connected therebetween, said runner being bent to conform to the angle between the aspects of the first and second support surfaces; and

a second integral leg member comprising a forward upright, a rearward upright, and a runner connected therebetween, said runner being bent to conform to the angle between the aspects of the first and second support surfaces;



said first and second leg members being foldable flat against said first and second support surface for storage;

4,609,226

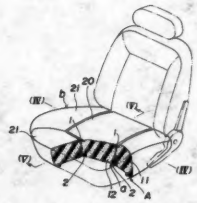
VEHICLE SEAT

Toshio Yoshizawa, Akishimashi, Japan, assignor to Tachikawa Spring Co., Ltd., Tokyo, Japan

Filed Aug. 14, 1984, Ser. No. 640,522

Int. Cl.[4] A47C *7/02*

U.S. Cl. 297—452 **1 Claim**



1. A vehicle seat including a cushion member formed of a foam material with a plurality of grooves being cut therein so as to divide the cushion member into a central portion and side portions and forming boundary lines between the separate central portion and side portions, comprising:

a top member covering said cushion member, said top member including a top member central portion and a separately formed top member side portions, both of which are configured to correspond to and cover the respective central and side portions of said cushion member;

a plurality of partition cloths each of which is folded into U-shaped configuration so as to form a longitudinally-extending closed end and a longitudinally-extending open end containing the two free edges, each of said partition cloths having its closed end extending into said respective grooves in said cushion member, one of said two free edges of each said partition cloth being affixed to said top member central portion and the other of said two free edges of each said partition cloth being affixed to said top member side portions;

a plurality of hanger members with one end of each hanger member being affixed to said partition cloths;

means for anchoring the other end of each said hanger member to the underside of said cushion member so as to draw said partition cloths and said top member portions attached thereto into close fitting contact with said respective cushion member portions and into said grooves; and

said means for anchoring each of said hanger members to the underside of said cushion member includes a plurality of bores in said cushion member spaced at predetermined intervals corresponding to the location of said respective hanger members so that each said hanger member is ex-

tendable through a respective bore, each said bore extending from said grooves to the underside of said cushion member and a securing plate affixed to each of said hanger members, said securing plate being adapted to secure said other end of each said hanger member to the underside of said cushion member.

4,609,227

CUTTING-TOOL MOUNTING FOR ROTARY EXCAVATING HEAD

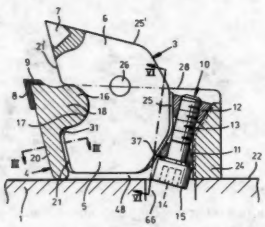
Walter Wild, Dinslaken, and Albert Peters, Giesenender Kirchweg 18, 4005 Meerbusch 2, both of Fed. Rep. of Germany, assignors to Ruhrkohle AG, Essen and Albert Peters, Meerbusch, both of, Fed. Rep. of Germany

Filed Nov. 10, 1983, Ser. No. 550,921

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1982, 3242144; May 11, 1983, 3317145; Nov. 2, 1983, 3339558

Int. Cl.⁴ E21B *10/62*

U.S. Cl. 299—93 **12 Claims**



1. In combination, a tool holder carried on a rotary excavating head and a pick removably received in a pocket of said tool holder, said pick having a tip protruding from an open end of said pocket and further having a shank with a leading flank and a trailing flank and with two generally flat sides, said pocket having two narrower walls confronting said flanks and two wider walls confronting said sides, said leading flank being provided with a concave arcuate indentation of substantially semicircular profile and the confronting one of said narrower walls of said pocket being provided with a correspondingly curved convex boss defining a rotary joint with said indentation which extends over an arc between 90° and 180° and is cetered on a pivot axis perpendicular to said sides near the level of said open end, said narrower walls being spaced apart sufficiently to let said shank swing relatively to said tool holder about said pivot axis, and screw-threaded counterbearing means in said pocket accessible from outside said tool holder for engagement with a surface area of said shank remote from said pivot axis to lock said shank in an inserted position, said surface area of said shank remote from said pivot axis comprising a convex portion of said trailing flank which confronts a convex portion of the other narrow wall of said pocket, said counterbearing means comprises a nut engaging said convex portions on one side of a region of closest approach of said convex portions, a clamping screw threadedly engaging said nut and located between said portions, and a pressure sleeve drawn by said screw toward said nut and engaging said convex portions on an opposite side of said region of closest approach.

4,609,228

METHOD AND MACHINE FOR MANUFACTURING BRUSHES

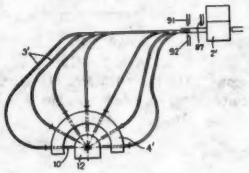
Wolfgang Bickel, Rimbach, Fed. Rep. of Germany, assignor to Schlesinger GmbH & Co. Maschinenbau KG, Burgwald, Fed. Rep. of Germany

Filed Jan. 9, 1985, Ser. No. 690,007

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1984, 3400510; Feb. 13, 1984, 3405001

Int. Cl.⁴ A46D *3/04*

U.S. Cl. 300—4 **57 Claims**



1. A method of manufacturing a brush, comprising the steps of: manufacturing a plurality of bristle bunches which each include a plurality of bristles, said manufacturing step including the step of connecting the bristles of each said bristle bunch together at one end thereof; thereafter transporting each of said bristle bunches through a respective elongate conduit from a first end to a second end thereof, each said conduit having a length substantially longer than the length of the associated bristle bunches; supporting the bristle bunches transported to said second ends of said conduits in a predetermined orientation relative to each other which is the same relative orientation the bristle bunches are to have in the completed brush; and thereafter simultaneously securing a fastening end of each said bristle bunch to a single brush member.

4,609,229

VEHICLE BRAKE CONTROL SYSTEM

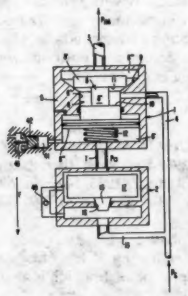
Berthold Edenhofer, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 20, 1984, Ser. No. 622,724

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1983, 3322098

Int. Cl.⁴ B60T *8/14*

U.S. Cl. 303—6 C **18 Claims**



1. A device for the load dependent control of the fluid pressure braking forces of vehicle brakes, comprising:

control valve means upstream of the brakes, having an input and an output side connected to fluid pressure,

control piston means within said control valve means, ar-

ranged as a valve body movable in an opening and a closing direction and subjected to fluid pressure applied to said input side of said control valve means and to mechanical preloading in said opening direction applied by mechanical preloading means and to fluid pressure applied to said output side of said control valve means in said closing direction, for causing said control valve means to limit said output side pressure relative to said input side pressure, above a load dependent threshold value of input side pressure;

an additional active surface at said control piston means;

means for load dependent control of said threshold value at one of said control piston means, and means with a drive connection to said control piston means, by subjecting said additional active surface to fluid pressure via a fluid connection branching off from said input side and;

seat-controlled valve means, provided in said fluid connection, for being affected by inertia forces during deceleration of said vehicle in order to product forces on said control piston means in said opening and closing directions in order to increase said output side pressure relative to said input side pressure by closing off said fluid connection and thereby reducing the pressure, to which said additional active surface is subjected, on the output side of said seat-controlled valve means, relative to said input side pressure, as a function of the vehicle deceleration;

whereby the output pressure is a function of variables including the input pressure and the position of the control piston means, which is controlled by the pressure supplied via the fluid connection branching off from said input side.

4,609,230

DUAL BRAKE VALVES

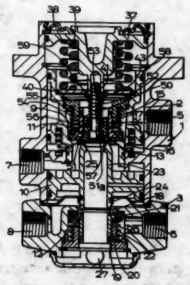
Denis J. McCann, Powys, Wales, assignor to Lucas Industries public limited company, Birmingham, England

Filed Nov. 28, 1984, Ser. No. 675,730

Claims priority, application United Kingdom, Dec. 3, 1983, 8332323; Apr. 13, 1984, 8409652

Int. Cl.[4] B60T *15/04*

U.S. Cl. 303—52 **6 Claims**



1. A dual brake valve assembly for use in fluid pressure-operated vehicle braking systems embodying two independent braking circuits, said valve assembly comprising a housing provided with a bore and with sets of primary and secondary ports associated respectively with the two braking circuits and each said set consisting of a supply port for connection to a source of fluid under pressure and a delivery port for connection to a brake actuator, an exhaust, and two co-axial primary and secondary valves which are operative when actuated to isolate said delivery ports from the exhaust and connect said delivery ports to said respective supply ports, said primary valve comprising a primary valve seating, and a primary valve head for engagement with said primary valve seating, and said secondary valve comprising a secondary valve seating, and a secondary valve head for engagement with said secondary valve seating, and the valve assembly incorporates a primary piston working in said bore for controlling operation of said primary valve, a secondary piston also working in said bore for controlling operation of said secondary valve, operation of said primary piston being operative to control operation of said secondary piston, a pressure plate for receiving a brake-actuating force to operate said primary valve, and resilient means through which said pressure plate acts on said primary piston to operate said primary valve, wherein said secondary piston is provided with rigid oppositely directed annular projections which define said primary and secondary seatings of said primary and secondary valves and with which said primary and secondary valve heads are adapted to co-operate to control communication between the said respective delivery ports and said exhaust, and said valve assembly incorporates an auxiliary exhaust valve comprising valve means operable in conjunction with said pressure plate and co-operating with said secondary piston to prevent premature release of pressure fluid from said primary braking circuit which, in turn, acts through said secondary piston to control the braking pressure in said secondary braking circuit.

4,609,231

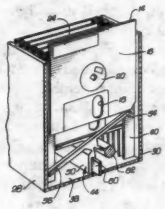
FLOPPY DISKETTE STORAGE CONTAINER

Eli Neuman, Chatsworth, Calif., assignor to Perfectdata Corporation, Chatsworth, Calif.

Filed Dec. 24, 1984, Ser. No. 685,896

Int. Cl.[4] A47B *81/06*

U.S. Cl. 312—15 **14 Claims**



1. A storage container for floppy diskettes or the like comprising:

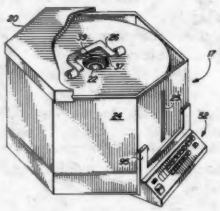
a plurality of spaced-apart pairs of parallel guides, the members of each pair located on opposite parallel first and second sides of said storage container, said spaced-apart pairs of parallel guides defining adjacently located parallelly oriented storage spaced for floppy diskettes in said container, said floppy disks insertable in and removeable from said storage spaced along said guides through a third side in said container adjacent said first and second sides;

a lifter means located within each storage space for supporting and moving said floppy diskettes, said lifter means having a first portion fixed with respect to said first and second sides and a second portion coupled to said first portion and swingable about an arc in a plane perpendicular to said first and second sides to move said floppy diskettes in said storage container along said guides partially out of said container through said third side; and

a camshaft extending through said storage spaces parallel to said first and second sides, said camshaft being provided along its length with a cam corresponding to each storage space, the cams for adjacent storage spaces being located at different positions around said camshaft, each cam engageable with the corresponding second portion of said lifter means in said storage space when said camshaft is rotated to swing said second portion to move said floppy diskette in said storage container along said guides partially out of said container through said third side, said floppy diskettes being moved along said guides partially

out of said container serially when said camshaft is rotated.

4,609,232
FLOPPY DISK STORAGE-EJECTION SYSTEM
Robert A. Florence, 17845 N. 6th St., Phoenix, Ariz. 85022
Filed Jun. 21, 1985, Ser. No. 747,325
Int. Cl.[4] A47B *81/06*
U.S. Cl. 312—16 **1 Claim**



1. Apparatus for storing and selectively dispensing panel-shaped members, said apparatus including

(a) a frame;

(b) a carousel rotatably mounted on said frame and including

(i) an arcuate generally continuous outer surface, and

(ii) a plurality of generally radially extending storage compartments formed therein and each extending to an associated slot formed in said arcuate surface, each of said storage compartments and associated slots being shaped and dimensioned such that one of said panel-shaped members can be inserted through said slot into said storage compartment;

(c) ejection means for dispensing one of said panel-shaped members from one of said storage compartments;

(d) means for rotating said carousel such that one of said storage compartments can be moved from one position to a second position at which one of said panel-shaped members carried in one of said storage compartments can be dispensed therefrom by said ejection means;

(e) means for providing motive power to said ejection means and carousel rotating means, said motive power means including

(i) a motor having a first contact surface, said motor being movable between at least two operative positions

a normal primary operative position in which said motor provides motive power to one of said carousel rotating means and said ejection means, and

a secondary operative position in which said motor provides motive power to the other of said carousel rotating means and said ejection means,

(ii) a control member having a second contact surface for slidably engaging said first contact surface of said motor, and

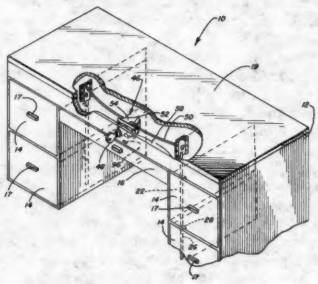
(iii) means for displacing one of said motor and said control member such that said first and second contact surfaces slidably engage to move said motor from said primary operative position to said secondary operative position.

4,609,233
FURNITURE LOCKING SYSTEM
Gregg W. Walla, Lake Bluff, Ill., assignor to Timberline Supply, Ltd., Lake Bluff, Ill.
Filed Nov. 3, 1983, Ser. No. 549,273
Int. Cl.[4] E05B *65/46*
U.S. Cl. 312—219 **27 Claims**

1. For use with an article of furniture having at least one drawer and a reciprocative slide bar selectively movable between a drawer locked position and a drawer unlocked position, an improved locking system comprising:

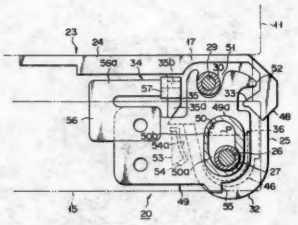
a flexible cable having opposite ends;

operator means engaging said cable selectively at any one of a plurality of positions intermediate said ends for rotating said cable about the longitudinal axis thereof; and



a connector/actuator means operatively associated between one end of the cable and slide bar for converting rotation of the cable about its longitudinal axis into reciprocative movement of the slide bar selectively to the drawer locked and drawer unlocked positions.

4,609,234
DOOR HINGE DEVICE FOR A REPOSITORY
Isao Naniwa, Oosaka; Kazuo Nishida, Ootsu, and Kiyoshi Yoshihara, Oosaka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed May 23, 1983, Ser. No. 496,990
Claims priority, application Japan, Sep. 14, 1982, 57-160260
Int. Cl.[4] E05D *15/02*
U.S. Cl. 312—296 **14 Claims**



1. A door hinge for a repository of the type having a repository housing with an opening in one face thereof and an edge portion defining the opening, a door member to open and close the opening of the repository housing, and a sealing member sandwiched between the edge portion and the door member to seal the door member and the repository housing when the opening of the repository housing is closed by the door member, the door hinge comprising:

a door-support member adapted to be mounted adjacent the edge portion of the repository housing and having a first coupling portion;

a door-mounted member adapted to be attached to that portion of the door member adjacent to the door-support member in position and having a second coupling portion for cooperatively connecting with the first coupling portion;

a shaft attached to one of said coupling portions;

means defining a shaft-fitting slot formed at the other coupling portion, the shaft being fitted in the shaft-fitting slot

so that the shaft and the shaft-fitting slot can rock relative to one another and move relative to one another in a direction perpendicular to the face of the repository housing where the opening is formed;

a guide pin attached to one of said coupling portions; and

means defining a guide recess formed at the other of said coupling portions for engaging the guide pin;

the guide pin and the guide recess constraining movement of the shaft and the shaft-fitting slot relative to one another in a direction perpendicular to the face of the repository housing when the door member is moved between a closed and a nearly closed position, and permitting the shaft and the shaft-fitting slot to rock relative to one another when swinging said door member between a nearly closed position and a fully open position wherein said rocking causes said door mounting member to rock relative to said door-support member thereby swinging said door to a fully open position.

4,609,235

DRAWER FOR ELECTRICAL CABINETS

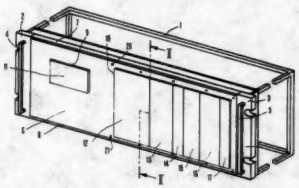
Luciano Ventura, Zola Predosa, Italy, assignor to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy

Filed Mar. 4, 1985, Ser. No. 707,557

Claims priority, application Italy, Mar. 23, 1984, 3395 A/84

Int. Cl.[4] A47B *88/00*

U.S. Cl. 312—320 R **13 Claims**



1. A drawer for electrical cabinets, comprising: a frame; a front wall adapted to be coupled to the frame, the front wall comprising a plurality of panels including a main panel fixed to the frame and defining an opening and at least one additional panel adapted to be arranged in said opening; and coupling means fixed to the main panel and to said at least one additional panel for removably coupling said at least one additional panel to the main panel, the coupling means including resilient elements and stop means adapted to be mutually coupled through a snap action by applying a front thrust to the additional panel.

4,609,236

DRAWER FOR CUPBOARDS

Guenter Twellmann, Spenge, Fed. Rep. of Germany, assignor to Ninkaplast GmbH, Fed. Rep. of Germany

Filed Apr. 3, 1984, Ser. No. 596,306

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1983, 8316770[U]

Int. Cl.[4] A47B *67/04*

U.S. Cl. 312—330 R **9 Claims**

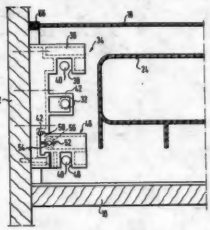
1. A drawer for cupboards, particularly a drawer for pots, comprising:

a baseplate having lateral and rear edges;

a front plate having an inner face and two sides;

a frame projecting vertically upwards and surrounding the baseplate at the lateral and rear edges, said frame being a self supporting part to be fastened to the baseplate and having an open side and two ends facing the front plate on the open side of the frame, said ends forming supports for the adjustable fastening of said front plate;

at each side of said front plate, an essentially vertical fastening strip attached to the inner face of the front plate, the frame having a hollow structure which engages the fastening strip, the fastening strip having a projection which is received in the hollow structure and which includes a recess which is open at the bottom and which surrounds at a distance a clamping screw extending transversely through the hollow structure to clamp the hollow structure to said fastening strip and to allow vertical and tilting adjustment of the front plate in relation to the base plate,



a sliding piece clamped in the hollow structure in the end of the frame which faces the front plate, and wherein the fastening strip slidably engages the sliding piece in the lower region of the frame, via a play-free guide extending transversely to the pull-out direction of the drawer; and

means for locking the fastening strip on the sliding piece.

4,609,237

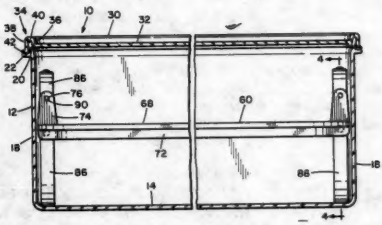
DUAL LEVEL GRID ASSEMBLY FOR A CONTAINER

Robert H. C. M. Daenen, Hekelgem, and Victor J. J. Cautereels, Borsbeek, both of Belgium, assignors to Dart Industries Inc., Northbrook, Ill.

Filed Jun. 29, 1984, Ser. No. 625,950

Int. Cl.[4] A47B *96/00*

U.S. Cl. 312—351 **18 Claims**



1. A food storage and preparation device comprising:

a receptacle having a base and oppositely positioned side walls and end walls terminating in a sealing rim;

a cover for said receptacle, said cover including a peripheral sealing member adapted to mate with said sealing rim;

a tray removably positionable in said receptacle;

tray support means extending downwardly from said tray;

support arms on said tray;

a pair of handles, said handles each including a pair of oppositely positioned finger-grippable portions;

pivot means on said handles and support arms for pivotally attaching said handles to said support arms;

said handles being pivotable on said support arms between a first position wherein one of said finger-grippable portions is adjacent said sealing rim and a second position wherein the other of said finger-grippable portions is adjacent said sealing rim thereby facilitating insertion and removal of the tray from said receptacle;

said tray support means in said first position of said handles being positioned on the base thereby creating a container-space located entirely above the tray; and

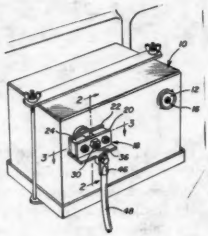
said tray support means in said second position of said handles being positioned intermediate said base and said sealing rim thereby creating a container-space located above and below the tray.

4,609,238

MAGNETIC TERMINAL-PLATE CABLE END CONNECTION FOR BATTERY

George H. Jamgotchian, 2769 W. Mesa, Fresno, Calif. 93711

Filed Feb. 5, 1985, Ser. No. 698,542
Int. Cl.[4] H01R *11/30*
U.S. Cl. 339—12 R 12 Claims



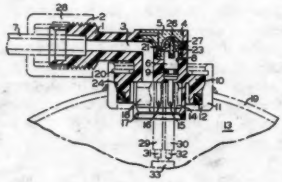
1. A battery cable-to-battery post connector for use in conjunction with a battery of the type including a recessed battery post having an outwardly opening threaded bore formed therein, said connector including a pair of generally parallel electrically conductive and ferrous plates, permanent magnet means sandwiched and secured between said plates, an elongated electrically conductive threaded fastener including at least a portion thereof projecting outwardly of the side of one of said plates remote from the other plate electrically connected to both of said plates and adapted for threaded anchoring in said bore, said connector also including an electrically conductive contact member constructed of ferrous material and to which one end of a battery cable may be electrically connected, said contact member including at least one generally planar side, said plates including exposed corresponding side marginal edges disposed in the same plane, said contact member being positionable with said planar side abutted against, spanning the spacing between and magnetically attracted to said edges.

4,609,239

ELECTROPNEUMATIC COUPLING ELEMENT FOR PROVIDING A PRESSURE-TIGHT CONNECTION BETWEEN A PRESSURE SUPPLY LINE AND A PRESSURE SUPPLY CONNECTION

Joachim Abel, Hanover, and Juan Rovira, Garbsen, both of Fed. Rep. of Germany, assignors to WABCO Westinghouse Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Feb. 28, 1985, Ser. No. 706,556
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1984, 3408135
Int. Cl.[4] H01R *4/64*
U.S. Cl. 339—15 9 Claims



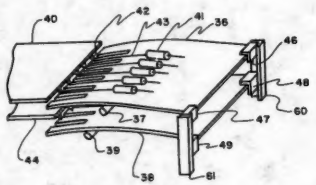
1. A coupling arrangement for providing a pressure-tight connection comprising, a hydropneumatic container having an access hole leading to a pressure chamber, an annular collar disposed in said access hole and secured to said container, an annular body portion fitted into and urged against a graduated ledge formed in said annular collar, a pressure supply line connectable to said pressure chamber by a right angle supply conduit formed in said annular body portion, and at least one electrical contact sealed and carried by said annular body portion for preventing leakage of pressure from said pressure chamber and for connecting an electrical cable to an electrical component located in said pressure chamber.

4,609,240

CABINET MOUNTED PRINTED CIRCUIT BOARD ELECTRICAL CONNECTOR

Helmut H. Pistor, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 605,960, May 1, 1984, Pat. No. 4,560,220.
This application Oct. 3, 1985, Ser. No. 783,889
Int. Cl.[4] H01R *9/09*
U.S. Cl. 339—17 LM 1 Claim



1. A cabinet mounted multichannel electrical connector for selectively providing electrical contact pressure between a plurality of electrical contacts on elastic printed circuit boards (PCBs) and a pluraiity of contact pins on electrical mother boards attached to a mounting cabinet, said electrical connector comprised of:

a plurality of elastic PCBs with each PCB having a plurality of elastic reeds formed by elongated cutouts on one edge thereof, each of said PCBs having a plurality of electrical components thereon which are electrically connected to a plurality of electrical contacts facing upward on said plurality of elastic reeds;

a plurality of elastic electrical component mother boards, each mother board having a plurality of electrical conductors and contact pins facing downward adjacent to and electrically associated with said electrical contacts facing upward on said elastic reeds; and

means for electrically connecting and disconnecting said plurality of electrical contacts on said elastic reeds to said plurality of contact pins on said cabinet attached mother boards, said means comprised of cabinet chassis attached plurality of elongated rigid bars and plurality of dual right angled rack edge connectors attached to cabinet frame channels with open portion faces directed inward and downward in said cabinet chassis, wherein each of said bars and said connectors form one of a plurality of individual racks within said cabinet chassis, said elongated rigid bar positioned between said right angled rack edge connector and said mother board wherein a connect mode for said plurality of electrical contacts on said elastic reeds to said plurality of contact pins on said mother boards is effected when said PCB is positioned over said rigid bar with each of said plurality of elastic reeds in electrical contact with said plurality of said contact pins on said mother board and wherein an opposite edge of said PCB which is directly opposite said one edge where said elastic reeds are formed is flexed under and retained by said dual

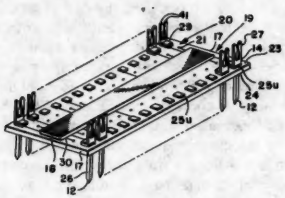
right angled rack edge connectors about a fulcrum provided by said rigid bar to bias said elastic reeds against said mother board and wherein a disconnect mode is effected by removing said opposite edge of said PCB from under said dual right angle rack edge connectors to release said elastic reeds from said mother board.

4,609,241

PROGRAMMABLE PROGRAMMED SOCKET

Jerold J. Peterson, Gilbert, Ariz., assignor to 4C Electronics, Inc., Mentor, Ohio

Filed May 25, 1984, Ser. No. 614,275
Int. Cl.⁴ H01R *29/00*
U.S. Cl. 339—17 CF **25 Claims**



1. A programmable electrical connection device, connectable between two electrical devices having terminal members arranged in respective terminal patterns, for establishing when programmed selected electrical paths between terminal members of such electrical devices, comprising

a support,

plural first electrical contact means mounted to said support in a prescribed pattern corresponding to the terminal pattern of one of the electrical devices for plug-in connection with respective terminal members of such one electrical device,

plural second electrical contact means mounted to said support in a prescribed pattern corresponding to the terminal pattern of the other electrical device for plug-in connection with respective terminal members of such other electrical device, and

electrically conductive means positioned with respect to said support for providing non-logical circuit shunt paths between each one of a plurality of said first contact means and everyone of a plurality of said second contact means for passive routing of electrical signals therebetween without any alteration of such signals or application of any logic function to said connection device, said conductive means being electrically programmable selectively to complete or to open any one or more of said non-logical circuit shunt paths to provide selected non-logical shunt paths between respective first contact means and second contact means so that electrical signals applied to each shunted one of said first contact means will be routed to a respective one of said second contact means or vice versa.

4,609,242

ELECTRICAL CONNECTOR APPARATUS

Nels E. Kemppainen, Bloomington, Minn., assignor to ADC Telecommunications, Inc., Minneapolis, Minn.

Filed Nov. 6, 1984, Ser. No. 669,092
Int. Cl.⁴ H05K *1/00*
U.S. Cl. 339—17 LC **2 Claims**

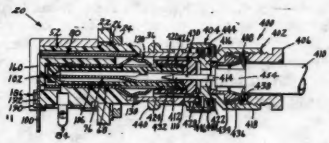
1. A jack for mounting on a circuit board, said jack for receiving a plug, said jack comprising:

a housing having a base and a barrel, said base having front and back walls and a bottom wall therebetween, said barrel extending from said front wall;

first and second means for conducting electricity, said first and second conducting means extending to said barrel for connection to said plug when said jack receives said plug, said first and second conducting means including first and second leads, respectively, said first and second leads having portions extending along the back wall of said base;

means for insulating said first and second conducting means from each other, said insulating means including a molded dielectric member, said dielectric member forming at least a part of the back wall of said housing; and

means for anchoring said first and second leads, said anchoring means including first and second grooves in the back



wall part of said dielectric member for receiving said first and second leads, said anchoring means further including first and second crimped portions of said dielectric member to at least partially cover said first and second leads in said first and second grooves to prevent said first and second leads from moving from said first and second grooves;

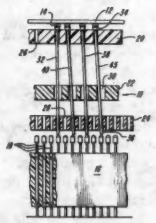
whereby said anchoring means stiffens said leads near the bottom wall of the base for ease in mounting to said circuit board.

4,609,243

ADAPTOR FOR AUTOMATIC TESTING EQUIPMENT

Robert P. Wyss, Manhattan Beach, Calif., assignor to Augat Inc., Mansfield, Mass.

Division of Ser. No. 548,422, Nov. 3, 1983, Pat. No. 4,535,536.
This application Jun. 11, 1985, Ser. No. 743,404
Int. Cl.⁴ G01R *31/02*
U.S. Cl. 339—17 M **4 Claims**



1. An adaptor for electrically connecting an electronic circuit device having terminals defining a first pattern to a test fixture having signal contacts defining a second pattern different from the first pattern, comprising:

a first plate having a plurality of first apertures therethrough each having a first size and arranged in a pattern that conforms to said first pattern;

a second plate having a like plurality of second apertures therethrough having a second size and arrayed in a pattern that conforms to said second pattern and that is different from the pattern by which the apertures of the first plate are arranged;

a third plate intermediate said first and second plates having a like plurality of apertures therethrough having a third size larger than said first size and arrayed in a pattern that conforms to said first pattern but not to said second pattern and with the apertures of the third plate each being

co-axially aligned with corresponding confronting ones of the apertures of the first plate; and

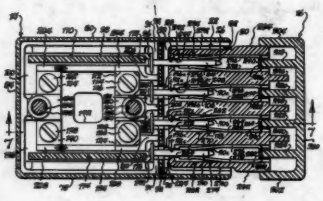
a like plurality of elongated probes each defining a linear axis along their direction of elongation each having a head and a tail portion individually slidably received through corresponding ones of said first, second, and third apertures such that said head portions extend beyond said first plate defining an array of signal contacts in a pattern that conforms to said first pattern and said tail portions extend beyond said second plate defining an array of signal contacts in a pattern that conforms to said second pattern, and in such a way that each one of all of the elongated probes respectively define the same linear axis along the direction of elongation thereof and that none of the elongated probes are so deflected as a consequence of being individually slidably received, through corresponding first, second, and third apertures that it defines a non-linear axis along the direction of elongation thereof.

4,609,244

ELECTRICAL CONNECTOR

John H. Buscher, East Amherst, and Michael E. Hoffman, Lockport, both of N.Y., assignors to Eastman Machine Company, Buffalo, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,757
Int. Cl.[4] H01R *27/00*
U.S. Cl. 339—32 M **30 Claims**



1. An electrical connector for supplying electrical power to a machine at particular voltage and phase magnitudes selected, said connector having one part adapted to be mechanically and electrically connected to the machine and another part adapted to be electrically connected to a conductor providing the electrical power to be supplied, said connector comprising:

(a) a plurality of pins on a first one of said connector parts and a corresponding plurality of mating slots on a second one of said connector parts adapted to receive said pins when said connector parts are connected together;

(b) one of said pins and a corresponding one of said mating slots serving as means for completing an electrical ground circuit and having a fixed orientation independent of the selected voltage and phase magnitude for the particular connector;

(c) the total number and respective orientations of the remaining ones of said pins and slots determined by the particular voltage and phase magnitude selected for the connector, said total number of orientations of said remaining pins and slots being fixed and non-changeable in the connector;

(d) said total number and orientations of said remaining ones of said pins and slots also being predetermined to prevent connection between either of said connector parts and a part of another connector of the same type as said connector but operative with different selected voltage and phase magnitudes;

(e) said first part having said pins comprising a first hollow body having a first end wall, said first end wall provided with openings through which pins extend, each of said pins having a portion extending inward into said body and a portion extending outward from said body, each of said opening in said first end wall being of a size and a shape to accommodate different selected orientations of said remaining pins, said outward extending portion of each of said remaining pins being flat and blade-like and each of said remaining pin openings in said first end wall having a first portion having a shape and size to receive said outward extending pin portion and a second portion disposed at an angle to said first portion and having a shape and size to receive said outward extending pin portion;

(f) each of said pins is comprised of two separate parts, one pin part including said outwardly extending portion and the other pin part including said inwardly extending portion, one of said pin parts having on one end thereof a tab provided with an opening therein and the other of said pin parts having on one end an extension of a cross-sectional shape and size to be received in said tab opening, said pin parts being permanently secured together with said extension fitted into said tab opening, the cross sectional shape of said tab opening and said extension accommodating two different relative orientations of said pin parts; and

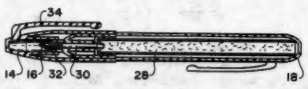
(g) said second part having said slots comprising a second hollow body having a second end wall containing said slots, a plurality of contacts in said second body, one for each slot and extending inwardly from said second end wall and the associated slot, said contacts being arranged in spaced relation along a row, each of said contacts comprising a pair of spaced-apart conductive blades adapted to engage said pins when inserted in said slots and a central portion joining said blades and located in spaced relation to said end wall and means in said second body defining a corresponding plurality of guide housings of electrically insulative material for receiving corresponding pairs of said blades, said guide housings having inner surfaces shaped to accommodate said blades in two different relative orientations corresponding to said two different relative orientations of said pin parts.

4,609,245

DISPENSER AND METHOD FOR DISPENSING HUNTING ODORS

Helmut W. Sakschek, 618 Fairview Ave., Neenah, Wis. 54956

Continuation of Ser. No. 674,468, Nov. 21, 1984, abandoned, which is a continuation of Ser. No. 413,080, Aug. 30, 1982, abandoned. This application Aug. 16, 1985, Ser. No. 766,676
Int. Cl.[4] A01N *25/00*; A61L *9/04*
U.S. Cl. 239—36 **3 Claims**



1. A hunting odor package and dispenser, comprising:

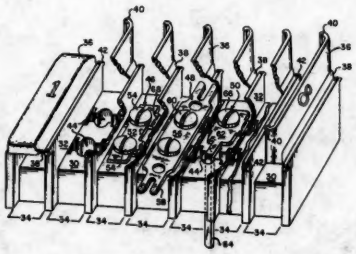
(a) a container, including (i) a receptacle capable of holding a hunting odor producing liquid, (ii) a reservoir inside said receptacle for absorbing and holding a hunting odor producing liquid, (iii) a conduit and a dispensing tip, said conduit being in intimate contact with said reservoir and extending from said reservoir to said tip, and (iv) a cap; and

(b) a low viscosity hunting odor producing liquid in said receptacle.

4,609,246
DEAD-FRONT TERMINAL BLOCK WITH MOVABLE COVERS

George Ustin, Croton-on-Hudson, and Andrew P. Soltis, Yonkers, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 452,573, Dec. 23, 1982, abandoned.
This application Jun. 10, 1985, Ser. No. 743,263
Int. Cl.[4] H01R 9/00
U.S. Cl. 339—59 M 6 Claims



1. A dead front terminal block comprising:

(a) an elongated block of insulating material having a plurality of longitudinally spaced parallel planar barriers each protruding from three sides of the block, each adjacent pair of barriers defining a terminal receiving section having three open sides, a portion of the block in each section including a mounting hole for said terminal;

(b) a plurality of movable covers for closing respective ones of said open sides, each cover having substantially one entire edge integrally molded to an hingedly movable on substantially one entire edge of one of the barriers defining a section, when open said cover extending coplanar with and in the same direction as the barrier to which it is molded, and when closed said cover engaging the adjacent barrier defining said section;

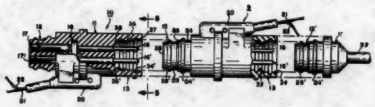
(c) a plurality of latching means for holding the covers closed, the latching means for each cover comprising a member molded on the cover and a tab molded on said adjacent barrier which is engaged by said cover member when said cover is closed; and

(d) a plurality of terminals mounted in respective ones of the sections.

4,609,247
CONNECTOR HAVING TWO SEAL-RINGS OF DIFFERENT DIAMETERS

Ira R. Annoot, Pasadena, Tex., assignor to Houston Geophysical Products, Inc., Houston, Tex.

Filed Jul. 11, 1983, Ser. No. 512,604
Int. Cl.[4] H01R 11/00
U.S. Cl. 339—60 M 3 Claims



1. A double-ended seismic takeout clip including:

a cylindrical male connector plug at one end thereof;

a cylindrical female connector plug at the opposite end thereof and being adapted to become operatively coupled with a male connector plug of an adjacent clip;

said male plug having a cylindrical, smaller-diameter forward body section and a cylindrical larger-diameter rear body section;

said female plug having a cylindrical, larger-diameter forward bore section and a cylindrical, smaller-diameter rear bore section, each bore section having an annular groove therein, and said grooves having differently sized diameters;

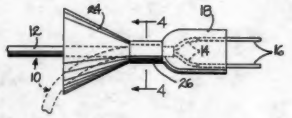
a seal-ring outwardly and radially extending from each one of said body sections, each seal-ring having an outer diameter, the outer diameter of said seal-ring on said smaller-diameter forward section is smaller than the outer diameter of said seal-ring on said larger-diameter rear section; and

said seal-rings and said grooves being sized such that one seal-ring moves freely past the groove provided for the other seal-ring, whereby the wall of each one of said grooves engages the opposite sides of its mating seal ring when said male and female plugs are slideably mated together.

4,609,248
CORD AND END FITTING PROTECTOR

Gerald A. Haase, 1005 Country Club Rd., Lake Oswego, Oreg. 97034

Filed Sep. 4, 1984, Ser. No. 646,936
Int. Cl.[4] H01R 13/56, 13/58
U.S. Cl. 339—103 R 8 Claims



1. For attachment to a cord having a fitting on one end, a cord and fitting protector comprising:

(a) clamp means configured to overlie and engage a portion of the length of a cord adjacent the fitting end thereof, for frictionally engaging the outer surface of a cord and firmly securing the clamp means in fixed position on the outer surface of the cord, and

(b) an enlarged , hollow protector member secured to said clamp means and extending outwardly away from said clamp means to a dimension at least about twice the corresponding dimension of the clamp means and arranged to encircle a portion of a cord inwardly of a fitting on the end thereof.

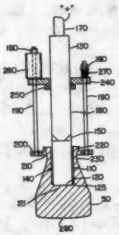
4,609,249
ELECTRICALLY CONDUCTIVE CONNECTION FOR AN ELECTRODE

Thomas R. Hornack, and Robert J. Chilko, both of Lower Burrell, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 25, 1985, Ser. No. 726,813
Int. Cl.[4] H01R 4/38; C25C 1/00
U.S. Cl. 339—263 E 3 Claims

3. In a cell for producing aluminum by electrolysis in a molten salt, an electrically conductive connection for an electrode assembly of the cell, said electrically conductive connection comprising an electrode flask and a conductor rod, said flask defining a collar, a cavity partially surrounded by the collar and an interface surface within the cavity, said conduc-

tor rod also defining an interface surface, said electrically conductive connection further comprising means for pulling



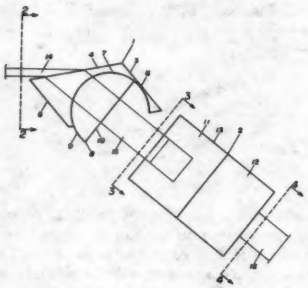
the conductor rod into compressive and electrical contact with the flask within the cavity and at the interface surfaces.

4,609,250

PRISMATIC ENLARGER-REDUCER

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed Aug. 27, 1984, Ser. No. 644,379
Int. Cl.[4] G02B *5/04*
U.S. Cl. 350—6.4 **1 Claim**



1. A prismatic enlarger-reducer comprising in general a sngle-refraction prism which magnifies an incident beam in one dimension and an identical single-refraction prism revolved 90° from the first prism so as to magnify the beam in the other dimension, and comprising in particular;

a single-refraction prism (1) comprising an angular member (3) having an angular face (4) inclined 60° from the base (5) and 120° from the top (6) and having a concave cylindrical face (7) opposite said angular face (4), and comprising a revolving cylindrical member (8) mounted inside said angular member (3) and having a convex cylindrical face (9) adjoining said concave cylindrical face (7) and having a longitudinal planar face (10) opposite said convex cylindrical face (9), and

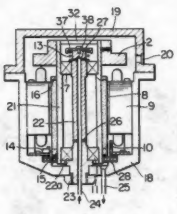
an identical single-refraction prism (2) revolved 90° from the position of said single-refraction prism (1) on an axis occupying the centerline of refracted beam (16) and comprising an angular member (13) having an angular face (11) inclined 60° from the base and 120° from the top and having a concave cylindrical face opposite said angular face (11), and comprising a revolving cylindrical member mounted inside said angular member (13) and having a face identical to said convex cylindrical face (9) of said single-refraction prism (1) and having a face identical to said longitudinal planar face (10) of said single-refraction prism (1).

4,609,251

ROTARY DRIVE DEVICE

Masaki Nakaoka, Yokohama; Teruo Komatsu, and Shinji Goto, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 8, 1983, Ser. No. 521,330
Claims priority, application Japan, Aug. 14, 1982, 57-141222
Int. Cl.[4] G02B *26/10*
U.S. Cl. 350—6.8 **4 Claims**



1. A rotary drive device comprising:

a central shaft fixed to a housing;

a hollow rotatable member rotatably supported through a bearing on a periphery of said central shaft;

a rotated member supported on said hollow rotatable member and integrally rotated therewith; and

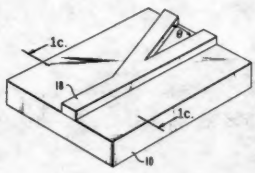
drive means for driving to rotate said hollow rotatable member, said drive means comprising a rotor mounted on said hollow rotatable member and a stator fixedly supported on the housing in opposition to said rotor, the inside of said central shaft being formed with a passage for circulating lubricating oil therethrough.

4,609,252

ORGANIC OPTICAL WAVEGUIDE DEVICE AND METHOD OF MAKING

Shi-Yin Wong, Santa Monica, and Gregory L. Tangonan, Oxnard, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 25,709, Apr. 2, 1979, abandoned. This application Feb. 15, 1984, Ser. No. 579,791
Int. Cl.[4] G02B *6/10*
U.S. Cl. 350—96.12 **6 Claims**



1. A waveguide structure comprising a substrate and a waveguide strip thereon including a polymerized photoactive composition containing a plastic material which is transmissive to light waves in the visible and near infrared range, a phenylglyoxylic acid or derivative thereof, and a photopolymer.

4,609,253

DUAL SCREEN SYSTEM

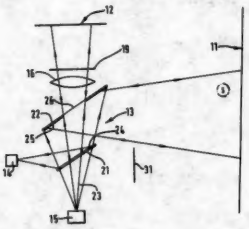
Zoran Perisic, "Gwynfenton", White Well, St. Teath, Nr Bodmin, Cornwall, United Kingdom

Filed Oct. 4, 1983, Ser. No. 538,923

Claims priority, application United Kingdom, Oct. 5, 1982, 8228412

Int. Cl.[4] G02B *27/14*

U.S. Cl. 350—174 13 Claims



1. A method of dual screen filming comprising projecting an image positioning first reflective means in the optical path of the projected image at an angle thereto so as to reflect only a portion of the projected image onto a first front projection screen, positioning a second front projection screen in the optical path of the portion of the projected image unreflected by the first reflective means, and collecting the portions of the projected image reflected from the first and second front projection screens upon a second reflective means which directs the light into the lens of a camera whereby a composite image is formed.

4,609,254

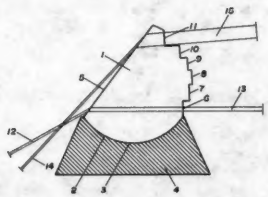
MULTIPLE PRISM

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed Aug. 22, 1984, Ser. No. 643,162

Int. Cl.[4] G02B *5/04*

U.S. Cl. 350—286 1 Claim



1. A multiple prism (1) comprising a longitudinal segment of a glass cylinder with one planar entry face (5) and multiple exit faces (6–11) disposed at varying angles to entry face (5), with all faces (5, 6–11) parallel to the cylindrical axis of the prism (1).

4,609,255

LIQUID CRYSTAL DISPLAY WITH TWIST ANGLE LESS THAN 80 DEGREES

Frans Leenhouts, Schliern, and Maarten de Zwart, Niederrohrdorf, both of Switzerland, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 29, 1984, Ser. No. 626,196

Claims priority, application Switzerland, Jul. 1, 1983, 3625/83

Int. Cl.[4] G02F *1/13*

U.S. Cl. 350—341 5 Claims

1. A liquid crystal display comprising:

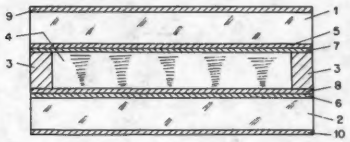
two parallel support plates separated by a peripheral border to form a cell in the space between said plates and said border;

a layer of nematic liquid crystal with positive dielectric anisotropy filled in said cell;

electrode coatings formed on inside surfaces of said plates;

first and second orientation coatings formed on respective of said electrode coatings, said orientation coatings defining orientation directions enclosing an angle (α) less than 80°,

a first polarizer associated with said first orientation coating and having a polarization direction which runs parallel to the orientation direction of said first orientation coating;



a second polarizer associated with said second orientation coating and having a polarization direction which runs perpendicular to the orientation direction of the second orientation coating;

said polarizers having an extinction power greater than 100;

said liquid crystal layer having a thickness (d) and defining an anisotropy of an index of refraction (Δn) the product of which is less than 1.3 μm; and

a dichroic dye of up to 3% by weight added to the liquid crystal layer.

4,609,256

LIQUID CRYSTAL OPTICAL DEVICE

Haruo Nakamura, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Jul. 23, 1982, Ser. No. 401,272

Claims priority, application Japan, Jul. 24, 1981, 56-116005

Int. Cl.[4] G02F *1/13;* C09K *19/30, 19/20*

U.S. Cl. 350—346 9 Claims

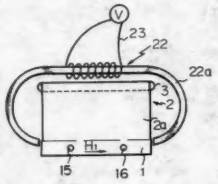
1. A liquid crystal optical device comprising a liquid crystal display panel including two opposed transparent substrates each having at least one electrode deposited on the interior surface thereof, a layer of a liquid crystal composition, the liquid crystal composition being an optically active nematic liquid crystal composition having a dielectric anisotropy which, at ordinary temperatures, becomes zero at a crossing frequency ("f_c") of 100 KHz or less, the dielectric anisotropy being positive at frequencies lower than f_c ("f_l") and negative at frequencies higher than f_c ("f_h"), the interior surface of each substrate having been treated so that the liquid crystal molecules adjacent to the surfaces of the substrates are oriented in parallel with the respective direction of orientation, the substrates being arranged so that the molecules of the liquid crystal are in a twisted configuration of more than 360°, a pair of polarizing plates disposed on the exterior surfaces of the substrates, the axes of polarization of the two polarizing plates being substantially orthogonal to each other and the axes arranged at a position of $\pm 45°$ with respect to the bisector of the angle formed by the two directions of orientation provided on the interior surfaces of the substrates.

4,609,257

FARADAY ROTATOR ASSEMBLY

Masataka Shirasaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 23, 1984, Ser. No. 603,188
Claims priority, application Japan, Apr. 25, 1983, 58-071390; Apr. 25, 1983, 58-071391
Int. Cl.[4] G02F *1/09*; G02B *6/10*
U.S. Cl. 350—376 9 Claims



1. A Faraday rotator assembly comprising:

a thin plate Faraday rotator formed of an optically transparent magnetic material and arranged for passing light beams along a path in a first direction parallel to said thin plate;

means for applying a first magnetic field in said first direction to the thin plate Faraday rotator, which field saturates the thin plate Faraday rotator along said path with reversible magnetization; and

means for applying a second magnetic field to said thin plate Faraday rotator in a second direction that is parallel to said thin plate Faraday rotator and perpendicular to said first direction;

wherein the angle of Faraday rotation of the thin plate Faraday rotator is reversed by reversing the direction of the first magnetic field, and

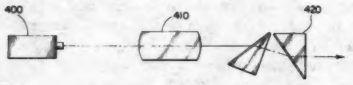
the magnetization of the thin plate Faraday rotator is maintained in a saturation state by the second magnetic field at least during the reversing of the direction of the first magnetic field.

4,609,258

DIODE LASER COLLIMATOR

Iwao P. Adachi, Westminster, and Yahiko Yamada, San Jose, both of Calif., assignors to Joseph W. Price, Newport Beach, Calif.

Filed Oct. 29, 1982, Ser. No. 437,793
Int. Cl.[4] G02B *27/64*
U.S. Cl. 350—395 17 Claims



11. A semiconductor laser beam prism polarizer for polarizing and correcting incident laser radiation in the form of an emitted laser beam from a semiconductor laser to a circular cross-section, comprising:

prism means for correcting the beam into a beam having a substantially circular cross-section; and

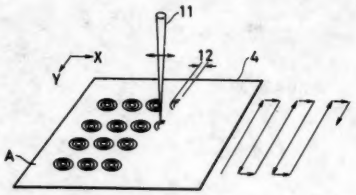
polarizing means comprising a coating of a plurality of alternating layers of materials having high and low refractive indices, respectively, said layers being disposed on a surface of said prism means through which said laser beam passes to form a prism polarizer of a predetermined design wavelength, and wherein the ratio of said high refractive index to said low refractive index is in the range 1.2 to 1.35 and the ratio of the wavelength of said incident laser radiation to the design wavelength of said prism polarizer is about 0.8.

4,609,259

PROCESS FOR PRODUCING MICRO FRESNEL LENS

Takashi Suemitsu; Shinichi Suzuki, and Takashi Niriki, all of Yamanashi, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 9, 1984, Ser. No. 669,792
Claims priority, application Japan, Nov. 11, 1983, 58-210765
Int. Cl.[4] G02B *3/08*
U.S. Cl. 350—417 4 Claims



1. A process for producing a micro Fresnel lens having a grooved surface from a substrate coated with a resist layer comprising the following steps:

moving a substrate coated with a resist layer in a first direction relative to a source of actinic radiation:

scanning said actinic radiation linearly in a direction perpendicular to said first direction on said resist coat within a first predetermined width while interrupting and overlapping application of said actinic radiation to form a latent image of a portion of a micro Fresnel lens within said first predetermined width;

indexing said substrate with respect to said source of actinic radiation to scan a second portion of said substrate adjacent said first predetermined width in the form of a second predetermined width;

repeating said scanning and indexing steps until the entire latent image of said lens is formed; and

developing the exposed resist layer to form the grooved surface of said Fresnel lens.

4,609,260

AUTOMATIC FOCUSING APPARATUS FOR ZOOM LENS

Tohru Kawai, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 17, 1984, Ser. No. 611,414
Claims priority, application Japan, May 20, 1983, 58-89784
Int. Cl.[4] G02B *7/10, 15/18*
U.S. Cl. 350—430 5 Claims

1. An operation mechanism for a zoom lens comprising:

(a) a focusing actuator member capable of changing between a manual focusing mode and an automatic focusing mode;

(b) a first lens component for focusing in response to manual movement of said focusing actuator member;

(c) a movable second lens component for varying the magnification power;

(d) a third lens component arranged upon zooming to move to compensate for the image shift resulting from movement of said second lens component;

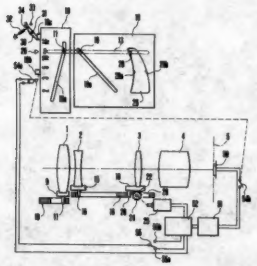
(e) means for driving said third lens component;

(f) drive control means for controlling the driving direction of said driving means;

(g) detecting means receptive of the reflected light from an object to be photographed for measuring the degree of sharpness of an object image, and responsive to detection of a direction in which the object image can be brought to

sharp focus for producing a control signal for said third lens component;

(h) cam means for controlling the amount of movement of said third lens component, said cam means having a first cam surface corresponding to the infinite limit of a focusing range rendered operative when said focusing actuator member is moved to select the manual focusing mode;



(i) control means receptive of the signal from said detecting means and responsive to selection of said mode of said focusing actuator member for controlling said drive means and for producing output signals to bring and take said third lens component into and out of contact with said cam surface depending upon said mode selected; and

(j) changeover means for controlling said control means by changing the mode of said focusing actuator member.

4,609,261

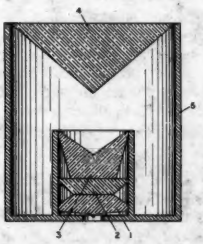
CONICAL MICROSCOPIC LENS

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed Nov. 15, 1984, Ser. No. 671,717

Int. Cl.⁴ G02B *13/18, 17/08*

U.S. Cl. 350—432 **1 Claim**



1. A conical microscopic lens M:LRT-3RT:C comprising in general four component lenses which receive an incipient image beam of an object and emit an enlarged whole beam, and comprising in particular;

a lower component lens LRT **(1)** having a convex conical reflective section **(7)** which receives and reflects an incipient image beam **(6)** of an object, forming inverted divergent conical beam **(8)**, having a convex conical section **(9)** which refracts said inverted divergent conical beam **(8)**, forming divergent conical beam **(10)**, and having a convex conical section **(11)** which emits said divergent conical beam **(10)**,

a first middle commponent lens RT **(2)** mounted above said lower component lens LRT **(1)** and having a convex conical section **(12)** which refracts said divergent conical beam **(10)**, forming an annular beam **(13)**, and having a planar section **(14)** which emits said annular beam **(13)**,

a second middle component lens RT **(3)** mounted above said first middle component lens RT **(2)** and having a convex conical section **(15)** which refracts said annular beam **(13)**, forming inverted convergent-divergent conical beam **(16)**, and having a concave conical section **(17)** which emits said inverted convergent-divergent beam **(16)**, and

an upper component lens RT **(4)** mounted above said second middle component lens RT **(3)** and having a convex conical section **(18)** which refracts said inverted convergent-divergent beam **(16)**, forming an enlarged whole beam **(19)**, and having a planar section **(20)** which emits said enlarged whole beam **(19)**.

4,609,262

ASPHERICAL LENS FOR USE IN OPTICAL EQUIPMENT

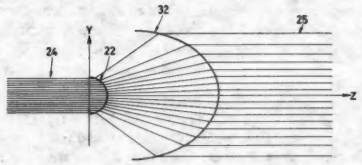
Taketoshi Fujikawa, and Kazuhiro Kozuka, both of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Dec. 14, 1984, Ser. No. 681,558

Claims priority, application Japan, Dec. 16, 1983, 58-237447

Int. Cl.⁴ G02B *3/04, 13/18*

U.S. Cl. 350—432 **5 Claims**



1. A single aspherical lens having spherical surface means and aspherical surface means for receiving parallel rays of incident light in one of the surface means, diverging or converging the rays of light while the rays of light are in the lens, and emanating parallel rays of emergent light from the other surface means.

4,609,263

TELEPHOTO LENS SYSTEM HAVING AN IMPROVED FOCUSING ARRANGEMENT

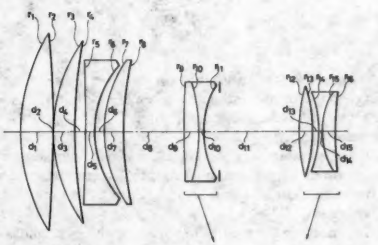
Masaki Imaizumi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 3, 1984, Ser. No. 576,898

Claims priority, application Japan, Feb. 4, 1983, 58-16081

Int. Cl.⁴ G02B *13/02*

U.S. Cl. 350—454 **6 Claims**



1. A telephoto lens system comprising a front lens group having positive refractive power, an intermediate lens group comprising a negative cemented doublet and a negative lens component, and a rear lens group having positive refractive power, said telephoto lens system being arranged to be focused on an object at a short distance from the state focused on an object at the infinite distance by integrally moving said inter-

mediate lens group toward the image side along the optical axis without varying the airspace between said negative cemented doublet and said negative lens component and, at the same time, moving said rear lens group toward the object side, and wherein said front lens group comprises a positive lens component, a positive lens component, and a negative lens component, and said rear lens group comprises a positive cemented doublet, said telephoto lens system arranged to fulfill the condition (1) and (2) shown below:

$$0 < \frac{\phi_s}{\phi} < 4\left(\phi_s = \Sigma\left(\frac{N' - N}{R}\right)\right) \quad (1)$$

$$0.5 < \frac{|\phi_2|}{\phi_3} < 2.0 \quad (2)$$

where, reference symbol ϕ represents the power of the lens system as a whole, reference symbols ϕ_2 and ϕ_3 respectively represent the power of the intermediate lens group and rear lens group, reference symbol ϕ_s represents the sum of powers of cemented surfaces in the intermediate lens group, reference symbol R represents the radii of curvature of cemented surfaces, and reference symbols N and N' respectively represent refractive indices of lens elements in front and rear of cemented surfaces.

4,609,264

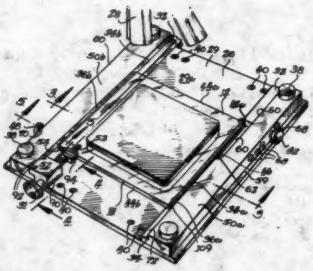
APPARATUS FOR POSITIONING FLAT OBJECTS FOR MICROSCOPIC EXAMINATION

T. Charles Podvin, Poway, and Peter J. Van Benschoten, Rancho Santa Fe, both of Calif., assignors to The Micromanipulator Microscope Company, Inc., Carson City, Nev.

Continuation-in-part of Ser. No. 572,932, Jan. 23, 1984, Pat. No. 4,557,568. This application Jan. 22, 1985, Ser. No. 693,627

Int. Cl.[4] G02B *21/26*

U.S. Cl. 350—529 **25 Claims**



1. Apparatus for providing a rotational adjustment of a rectangular object mounted at a given location in the X and Y directions, said apparatus comprising:

a frame support,

first and second rails mounted on said frame support and supported in parallel relationship to each other on said frame support and supporting therebetween the rectangular object,

means mounting the rails for spacing the first and second rails in adjusted positions to accommodate different sizes of objects therebetween,

means on each of said rails for engaging and positioning the object thereon at a predetermined location with respect to the rails, and

adjustment means engaging the flat object and for exerting a force thereon to rotate the object through a small adjustment in the XY plane.

4,609,265

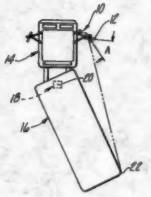
REARVIEW MIRROR ACTUATING DEVICE

Clyde M. McKee, 22175 Bernard St., Taylor, Mich. 48180; Ward Scott, 170 Pinewood Ter., Safety Harbor, Fla. 33572; Henry A. Warren, Morning View Dr., Yorktown Hgts., N.Y. 10598, and Dennis G. Scott, 202 E. Third St., Rochester, Mich. 48063

Filed Dec. 24, 1984, Ser. No. 685,406

Int. Cl.[4] G02B *7/18*

U.S. Cl. 350—605 **7 Claims**



1. An actuating device for automatically controlling the position of a movably mounted vehicle mirror in response to relative positioning of the vehicle with respect to a trailer pivotally mounted to the vehicle about a pivot axis, said device comprising:

mirror actuating means comprising a motor and means for moving said mirror upon actuation of said motor;

an electrical power source for said motor;

first switch means for actuating said motor in response to the pivoting movement of the trailer with respect to the vehicle;

second switch means for de-actuating said motor in response to a predetermined movement of said motor, said second switch means comprising a cam, means for rotating said cam in response to actuation of said motor, said cam having a plurality of lobes corresponding in number to the number of said plurality of first switches, a plurality of second switches, and means for positioning each of said second switches about said cam for engagement with one of said lobes at a predetermined rotary position of said cam; and

means for electrically connecting said power source to said motor through said first and second switching means.

4,609,266

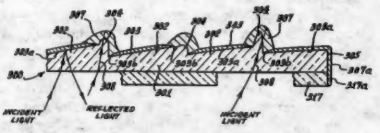
ELIMINATION OF INTERNAL REFLECTIONS AND DIFFRACTIONS FROM JUNCTURES IN AND AT THE PERIPHERY OF, A SEGMENTED MIRROR

C. James Blom, Bakersfield, Calif., assignor to Roxor Corporation, Bakersfield, Calif.

Continuation-in-part of Ser. No. 385,544, Jun. 7, 1982, Pat. No. 4,470,665, which is a division of Ser. No. 233,106, Feb. 10, 1981, Pat. No. 4,368,951. This application Aug. 20, 1984, Ser. No. 642,179

Int. Cl.[4] G02B *5/08*

U.S. Cl. 350—613 **23 Claims**



1. In the method of manufacturing a transparent mold segmented mirror having individual sectors on a transparent molding and comprising a myriad of metallized layers provid-

ing reflecting adjacent surfaces at the back side of the mirror away from the viewer, and oriented to produce, in the eyes of a viewer, a single virtual image, or separate virtual images from separate portions of such molded mirror, said layers having thinned peripheries, there being a network of zones separating the individual reflecting surfaces, the step that comprises

(a) substantially reducing undesirable reflections from said zones of separation by coating the back sides of said zones with material that includes a light absorber,

(b) the coating carried out to cover zones between reflecting surfaces and the thinned peripheries of said metallized reflecting layers.

4,609,267

SYNTHETIC RESIN LENS AND ANTIREFLECTION COATING

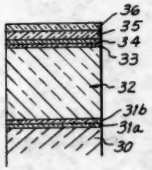
Hirokazu Deguchi, Suwa; Kenji Kojima, Nagano, and Takao Mogami, Suwa, all of Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Dec. 22, 1981, Ser. No. 333,519

Claims priority, application Japan, Dec. 22, 1980, 55-181687; Aug. 28, 1981, 56-135044

Int. Cl.⁴ G02B *5/28, 1/10;* G02C *7/10;* B05D *3/00*

U.S. Cl. 351—163 **12 Claims**



1. A synthetic resin lens construction having a high refractive index and improved antireflective and mar resistant properties, comprising:

(1) a lens body formed of a cross-linked synthetic resin and having a refractive index n_s of at least 1.55;

(2) a dielectric substance for use as an antireflective layer having a refractive index n within the range represented by the formula:

$$\sqrt{n_s \times n_h} + \frac{|n_s - n_h|}{4} \geqq n \geqq \sqrt{n_s \times n_h} - \frac{|n_s - n_h|}{4}$$

and has an optical film thickness of $\lambda/4$, wherein λ denotes a wavelength in the range of from about 450 nm to 650 nm disposed on the surface of the lens body, and

(3) a hard coat layer of about 1 to 6 μm thick having a refractive index n_h disposed on the antireflective layer.

4,609,268

VISUAL PRESENTATION PROJECTION APPARATUS

Cliff Crawford, 8 Piedmont Dr., Cranbury, N.J. 08512

Continuation of Ser. No. 145,131, Apr. 30, 1980, abandoned. This application Apr. 4, 1984, Ser. No. 596,540

Int. Cl.⁴ G03B *21/00*

U.S. Cl. 353—25 **38 Claims**

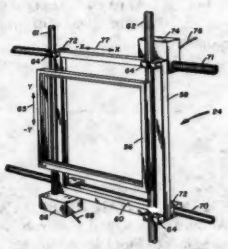
1. An apparatus for projecting a portion of a continuous integrated image transparency, randomly but deliberately selectable during projection comprising:

illumination means for directing a beam of light along a preselected path;

means for mounting said transparency so a portion thereof is disposed in said preselected path, said mounting means including a frame for fixedly and removably securing therein said transparency;

optical means disposed along said preselected path and positioned so said transparency is disposed between said illumination means and said optical means, said optical means for projecting said portion of said image of said transparency disposed in said path on a viewing surface; and

means for selectively continuously moving said mounting means and therefore said transparency in at least four directions within said preselected path during projection at a designated and controlled speed continuously adjustable within a range of speeds for continuously selecting and projecting various selected portions of said transparency on said viewing surface, movement of said transparency causing the projection on said viewing surface to present a continuous moving integrated image, said moving means being capable of moving said transparency randomly, said moving means including a carriage carrying said frame, said carriage for moving said frame independently in perpendicular directions in a single plane, said carriage including



a substantially planar support having a projection aperture disposed therethrough,

a first pair of rails movably mounted on said support, said frame being fixedly secured to said rails,

a second pair of rails being fixedly secured to a supporting surface and movably secured to said support, said first pair of rails being substantially perpendicular to said second pair of rails,

means for driving said first pair of rails simultaneously to effect movement of said frame relative to said support, and

means for driving said support along said second pair of rails to effect movement of said frame relative to said second pair of rails, said frame moving in a single plane,

driving of said first pair of rails and said frame thereby aligning different portions of said transparency with said projection aperture, said projections aperture being in the path of said light beam.

4,609,269

WIDE-ANGLE/TELEPHOTOGRAPHY CONVERTIBLE CAMERA WITH ELECTRONIC FLASH

Kazuo Kamata, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 1, 1984, Ser. No. 656,412

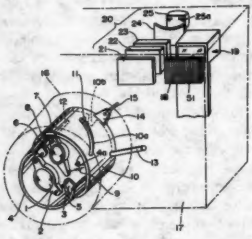
Claims priority, application Japan, Oct. 3, 1983, 58-152041[U]

Int. Cl.⁴ G03B *15/03*

U.S. Cl. 354—149.11 **15 Claims**

1. A camera selectively usable either for wide-angle photography or for telephotography, by changing the focal length of a taking lens system by manipulation of a changeover member, the camera having a flash unit mounted for movement on the camera between a first lowered position and a second raised position, a fixed light diffusing plate behind which said flash unit is dispoded in said first position, means actuated by move-

ment of said changeover member is a direction to convert the camera for wide-angle photography, to move said flash unit to said first position, means responsive to movement of said changeover member in a direction to convert the camera to



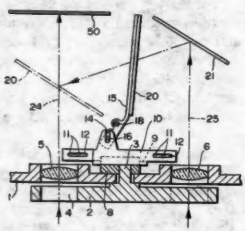
telephotography, to free said flash unit for movement toward said second position, means to energize said flash unit in each of said positions, and spring means urging said flash unit toward said second position.

4,609,270

CAMERA WITH INTERCHANGEABLE TAKING LENSES

Atsuo Kohno; Minoru Shiiba, and Eishiroh Kikuchi, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 4, 1985, Ser. No. 741,295
Claims priority, application Japan, Jun. 4, 1984, 59-81875[U]
Int. Cl.[4] G03B *3/00, 17/02*
U.S. Cl. 354—195.12 **12 Claims**



1. A camera having interchangeable taking lenses with different focal lengths, comprising

cover means having an opening therethrough;

means mounting the cover means on the camera for selective movement between positions in which said opening is aligned with a selected one of said taking lenses;

means in the camera movable between two positions in each of which there is established an optical path of suitable length from a respective one of said taking lenses; and

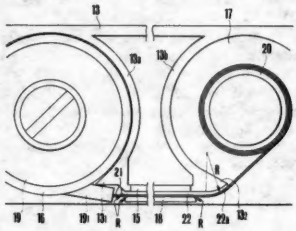
means interconnecting said cover means and said movable means such that when said cover means is moved so that said opening is in alignment with one of said taking lenses, said movable means is moved to the said position in which the optical path of said one lens is established, and when said cover means is moved so that said opening is in alignment with the other said taking lens, said movable means is moved to the said position in which the optical path of the other said taking lens is established.

4,609,271

SMALL SIZE CAMERA

Yoshiaki Watanabe, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 371,805, Apr. 26, 1982, abandoned.
This application Feb. 7, 1985, Ser. No. 698,755
Claims priority, application Japan, May 7, 1981, 56-68523
Int. Cl.[4] G03B *17/02*
U.S. Cl. 354—202 **2 Claims**



1. A small size camera using 35 mm film comprising:

a camera body;

a photographing lens arranged in the front part of said camera body and having a divergent lens so as to reduce the total length of the lens;

an aperture part formed at the rear part of said camera body as an opening for a photo-taking;

said camera body having a space formed behind the photographing lens; said space comprising an image forming optical path zone and a zone excluding the image forming optical path zone, said latter zone increasing forward the front portion of the camera body by virtue of the divergent lens;

a film supplying chamber formed at one end of the camera body, said film supplying chamber having an opening facing in a slantedly backward external direction;

a film winding chamber formed at the other end of the camera body, said film winding chamber having an opening facing in a slantedly backward external direction;

wall parts dividing the space into the film supplying chamber and the film winding chamber, wherein at least one of said wall parts largely projects into the zone including the image forming optical path zone so that a lateral width of the total camera is made shorter;

wherein a dimensional condition of $a' < W$ is satisfied, in which a' is the shortest distance between the wall part of the film supplying chamber and that of the film winding chamber, while W is the width of the aperture part and wherein a film magazine engaging part is provided at the edge between the wall part of the film supplying chamber and the aperture part, said film magazine engaging part engaging with a film exit means of the loaded film magazine so as to stabilize the loaded film magazine; and

further comprising a film guide rail arranged above the aperture part, said rail providing a curved portion at the wall part of the film winding chamber so as to stabilize the film feeding.

4,609,272

FINDER SYSTEM OF HIGH IMAGE MAGNIFICATION

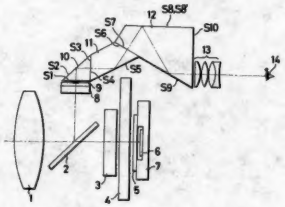
Hideo Yokota, Kanagawa; Masatake Kato, Tokyo, and Tetsuharu Nishimura, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha

Filed Jun. 28, 1985, Ser. No. 750,685

Claims priority, application Japan, Jul. 2, 1984, 59-137016; Jul. 2, 1984, 59-137017

Int. Cl.[4] G03B 13/02

U.S. Cl. 354—225 16 Claims



1. An optical apparatus for observing an object through an objective optical system, comprising:

optical means having an entrance face for receiving a light beam from an objective lens, a first reflection face for reflecting the light beam received through said entrance face, a second reflection face inclined with respect to said entrance face to further reflect the light beam reflected by said first reflection face, a roof type third reflection face for reflecting the light beam reflected from said second reflection face, and a fourth reflection face for reflecting the light beam reflected from said third reflection face to an exit aperture, whereby the light beam is turned to a desired direction; and

an eyepece lens for receiving the light beam passed through said exit aperture and for observing an object image from said objective optical system.

4,609,273

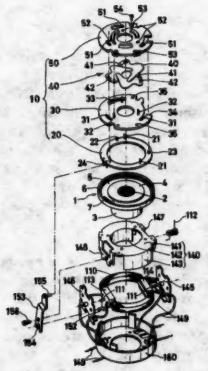
IRIS DIAPHRAGM DEVICE FOR A CAMERA

Hitoshi Kaise, Nirasaki, Japan, assignor to Nippon Seimitsu Kogyo Kabushiki Kaisha, Kofu, Japan

Filed Jul. 11, 1985, Ser. No. 753,787

Int. Cl.[4] G03B 9/02

U.S. Cl. 354—271.1 14 Claims



1. An iris diaphragm device for use in a camera, which comprises one or more iris diaphragm leaves capable of opening or closing around the optical axis to form an iris aperture; a leaf operating member disposed rotatably around the optical axis to open or close said iris diaphragm leaves; drive means having a movable magnetic member capable of moving rockingly around pivots extending outward from the opposed side portions of said movable magnetic member and one or more stationary magnetic members arranged along said movable magnetic member; and motion transmitting means composed of an arm member extending from of said side portions of said movable magnetic member and a connecting lever having its one end rotatably coupled with the free end portion of said arm member through a clearance to constitute a first coupling mechanism and the other end rotatably coupled with said leaf operating member through a clearance to constitute a second coupling mechanism so as to transmit the rocking motion of said movable magnetic member to said leaf operating member, said connecting lever being pivotally supported by a support pin eccentrically disposed relative to said pivots of the movable magnetic member, the length from said support pin to said first coupling mechanism being made shorter than that from said support pin to said second coupling mechanism.

4,609,274

CAMERA WITH AN AUTOMATIC FOCUS CONTROL DEVICE

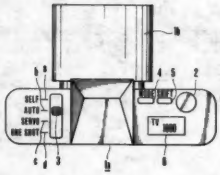
Tomonori Iwashita, Kanagawa, and Yoshihiko Aihara, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 558,767, Dec. 6, 1983. This application Apr. 11, 1985, Ser. No. 722,415

Claims priority, application Japan, Dec. 7, 1982, 57-214401; Dec. 7, 1982, 57-214402; Dec. 7, 1982, 57-214403; Dec. 7, 1982, 57-214404

Int. Cl.[4] G03B 3/00

U.S. Cl. 354—400 7 Claims



1. A camera comprising:

(a) exposure control means for carrying out at least a shutter speed priority exposure control mode and a shutter speed leading programmed exposure control mode;

(b) focusing control means for carrying out at least a servo type focusing control mode and a one-shot type focusing control mode; and

(c) first mode setting means operatively connected to said focusing control means to automatically set said focusing control means in said servo type focusing control mode when said automatic exposure control means carries out said shutter speed priority exposure control mode or said shutter speed leading programmed exposure control mode.

4,609,275

EXPOSURE CONTROL UNIT

Yasuo Ishiguro, Tokyo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Sep. 9, 1985, Ser. No. 774,228

Claims priority, application Japan, Sep. 29, 1984, 59-204644

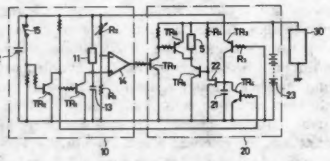
Int. Cl.[4] G03B 7/00

U.S. Cl. 354—435 4 Claims

1. An exposure control unit for use with a programming shutter including a shutter blade having function of a diaphragm blade, comprising:

an electrostrictive element having a fixed end and a free end deformed in accordance with an applied voltage;

interlocking means associated with said free end of said electrostrictive element for determining an opening quantity of the shutter blade in accordance with a deformation quantity produced in said free end of said electrostrictive



element in accordance with the applied voltage to the element;

means for supplying said element with a voltage increasing with passage of time in interlocked relationship with a photographing operation; and

means for discharging stored charges in said element at a timing when a proper exposure is obtained.

4,609,276

IMAGE FORMATION APPARATUS

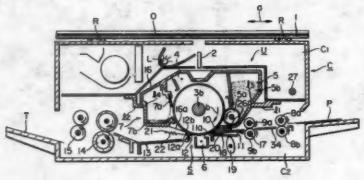
Morikazu Mitzutani, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 404,523, Aug. 2, 1982, abandoned. This application Jan. 10, 1985, Ser. No. 690,412

Claims priority, application Japan, Aug. 7, 1981, 56-124538

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—3 R **47 Claims**



1. An image formation apparatus having:

an image bearing member;

process means for acting on said image bearing member;

a process unit including said image bearing member and said process means and removable and totally separable from a body of said apparatus;

movable guide means for guiding a transported sheet toward said image bearing member; and

support means for supporting said movable guide means so as to position said guide means in relation to said process unit when said process unit is mounted in an operative position.

4,609,277

ELECTRO PHOTOGRAPHIC COPIER WITH PHOTOCONDUCTIVE BELT

Yoshihiro Yokoyama, Settsu; Yoshito Urata, Katano; Kazuo Watanabe, Nakano, and Kiyoteru Ito, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 18, 1984, Ser. No. 683,195

Claims priority, application Japan, Dec. 19, 1983, 58-240411

Int. Cl.[4] G03G *15/00*

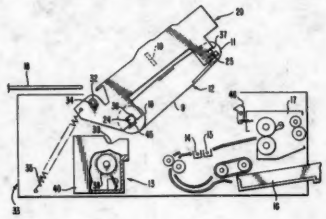
U.S. Cl. 355—3 R **4 Claims**

1. An electrophotographic copier comprising:

a photoconductive apparatus including a photoconductive belt and at least first and second roller means around which said photoconductive belt runs;

a first body;

a development apparatus mounted on said first body and having a supporting means for positioning and supporting said first roller means at both ends thereof, and said first body having a single fixing means thereon at a point spaced from said first roller means;



a second body; and

an optical apparatus mounted on said second body, said second body supporting said photoconductive apparatus and having guide means for determining the positions of said first and second roller means, said second body being supported by said single fixing means, whereby said second body is supported substantially at three points on said first body.

4,609,278

HEAT FIXING DEVICE

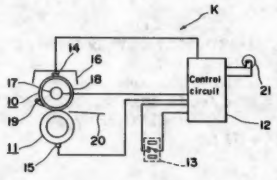
Akihiko Taniguchi, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 14, 1985, Ser. No. 733,800

Claims priority, application Japan, May 14, 1984, 59-98136

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—3 FU **4 Claims**



1. A heat fixing device for use in a copying apparatus, including a heating roller subjected to heating control at high temperatures and a pressing roller held substantially in pressing contact with said heating roller and rotated together with said heating roller at the time of a fixing operation by said heat fixing device, said heat fixing device comprising:

an ambient temperature sensor for detecting ambient temperature of said copying apparatus;

first and second temperature sensors for detecting temperatures of said heating roller and said pressing roller, respectively;

a decision means for determining whether or not the ambient temperature of said copying apparatus is above a predetermined temperature in response to detection of the ambient temperature by said ambient temperature sensor and for determining respective temperatures of said heating roller and pressing roller in response to detection of said respective temperatures by said first and second temperature sensors, said heating roller having been provided with a heater while said pressing roller is not provided with a heater; and

an intermittent drive means which is so controlled by said

decision means as to intermittently drive said heating roller and said pressing roller during a waiting mode of said copying apparatus when the ambient temperature is not more than said predetermined temperature and the temperature of said pressing roller is not at a predetermined temperature, so as to warm-up said pressing roller; said decision means also controlling heating of said heating roller so as to maintain said heating roller at a predetermined fixing temperature.

4,609,279

LASER PRINTING SYSTEM WITH A SOLVENT VAPOR FIXING STATION AND ADAPTABLE FOR EITHER MULTICOLOR OR VERSO PRINTING

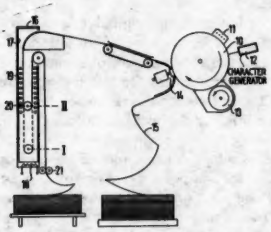
Gerhard Hausmann, Olching; Hübert Mügrauer, Poering, and Helmut Naeser, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 21, 1985, Ser. No. 703,915

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1984, 3406244

Int. Cl.⁴ G03G *15/20*

U.S. Cl. 355—3 SH **21 Claims**



1. A non-mechanical printer or copier system, comprising:

a first preceding and a second succeeding printer or copier unit;

the first and second units each having a developing station means at which a toner image is developed and applied to a tape-shaped recording medium at a transfer station;

at least one of the first and second units having a solvent vapor fixing station means associated therewith for fixing the image;

the first and second units being connected in series and simultaneously operated and wherein means are provided such that the recording medium emerging from a medium exit region of the preceding first unit is supplied to a medium entry region of the succeeding second unit; and

means for selectively changing the system from verso printing to multicolor printing and vice-versa.

4,609,280

XEROGRAPHIC APPARATUS AND PROCESS WITH BACKSIDE PHOTOCONDUCTOR IMAGING

Carl A. Queener, Lyons, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1983, Ser. No. 547,546

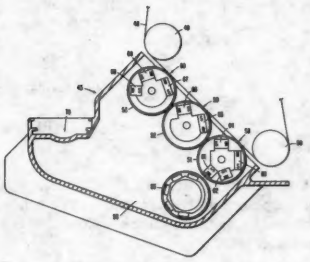
Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—3 DD **6 Claims**

1. In an electrophotostatic imaging machine having a photoconductor mounted for movement in a closed loop wherein said photoconductor includes a chargeable photosensitive layer and an image transmitting layer on an inner side of said photosensitive layer, means for electrostatically charging said photoconductor, and means for feeding copy medium past an image transfer station relative to the outer surface of said photoconductor, an improvement comprising:

means for imposing an image onto the inner surface of said electrostatically charged photoconductor;

means for applying toner to an external surface of said image bearing photoconductor and including means for scavenging toner disassociated with the image from said photoconductor outer surface; and



means biasing said toner applying and scaverging means for concurrently depositing toner on imaged areas of said photoconductor and attracting toner from nonimaged areas of said photoconductor.

4,609,281

PORTABLE ELECTROSTATOGRAPHIC COPYING MACHINE

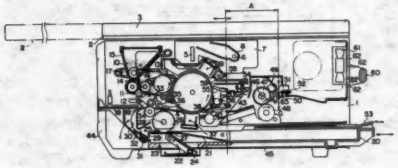
Kiyoshi Miyai; Shuhei Uotani, both of Himeji, and Toyohiko Tsunemine, Hyogo, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Feb. 6, 1985, Ser. No. 698,606

Claims priority, application Japan, Feb. 8, 1984, 59-22092; Feb. 20, 1984, 59-30742; Feb. 22, 1984, 59-33130

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—3 R **5 Claims**



1. An electrophotographic copying machine which is provided with an original support plate sliding in successive reciprocation along an upper surface of and laterally between and partially beyond front and rear sides of the body thereof, in the extremes of its frontward or rearward movement, respectively, characterized in that the center of gravity of said body is biased from the dimensional center of said body in the sliding direction of said original support plate toward the one of said front or rear sides of said body which said original support plate extends least beyond in its reciprocation, and also mounting on said one side a handle for transporting said machine, a sheet discharge tray and a sheet feed cassette slideably mounted through holes in said one side.

4,609,282

APPARATUS FOR PRODUCING AND STACKING INFORMATION COPIES

Robert P. Crandall, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

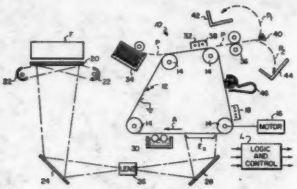
Filed Aug. 2, 1985, Ser. No. 761,940

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—3 SH **4 Claims**

1. An improvement for apparatus producing information copies on transparency material interleaved with plain paper

separator sheets as copy receiver members, said improvement comprising:



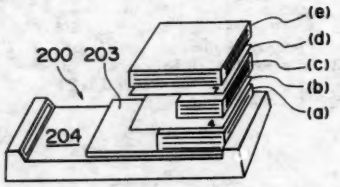
means for selectively stacking such transparency material and such separator sheets after information copies are produced, in separate stacks, or in interleaved fashion in one stack.

4,609,283

COPYING APPARATUS WITH PREPROGRAMMED FEATURES ENABLED BY A DOCUMENT

Tomoji Murata, and Masazumi Ito, both of Toyohashi, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 26, 1984, Ser. No. 686,281
Claims priority, application Japan, Dec. 26, 1983, 58-248637
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—14 R **8 Claims**



1. In copying apparatus on which an automatic original document feeding device can be removably mounted for copying an original document the improvement comprising;

an original document identification sheet marked with an identification code symbol and capable of being transported by said automatic original document feeding device;

a sensor provided on said automatic original document feeding device for reading the identification code symbol marked on said original document identification sheet;

means for judging the existence of a predetermined code from the identification code symbol read by said sensor;

a memory means for storing a plurality of sets of predetermined data, each including information corresponding to said predetermined code and also a functioning mode data set capable of enabling the copying function;

a first operating means for permitting the user to manually input said code into said memory means;

a second operating means for permitting the user to manually input said functioning mode data into said memory means in correlation with the code symbol; and

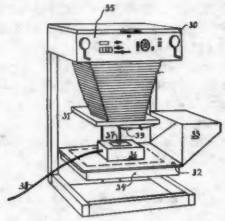
a control means arranged to control the copying apparatus wherein when the original document identification sheet is transported by the automatic original document feeding device so that said identification code symbol is read by the sensor, and the code corresponding to said identification symbol is verified by said judging means, said control means is enabled to read the functioning mode data stored together with said code from said memory means for controlling the copying apparatus to execute the copying function based on said read functioning data.

4,609,284

DEVICE FOR EXPOSING SMALL ORIGINALS IN A REPRODUCTION CAMERA

Jakob N. Jensen, Hillerod, Denmark, assignor to Helioprint AS, Kvistgaard, Denmark

Filed Feb. 21, 1985, Ser. No. 703,741
Claims priority, application Netherlands, Feb. 24, 1984, 8400576
Int. Cl.[4] G03B *27/74, 27/80*
U.S. Cl. 355—68 **9 Claims**



1. A device for exposing originals of small size in a reproduction camera that comprises means for holding an original to be reproduced, camera light means for illuminating an original on said holding means, means for holding a photographic material, a lens and means for disposing the lens in focus between said original holding means and said material holding means;

said exposing device comprising:

(a) means adapted to be placed on said original holding means for supporting an original of small size in an elevated position thereover so as to be reproducible by the reproduction camera;

(b) a light source separate from said camera light means for illuminating an original positioned on said supporting means;

(c) sensing means for detecting illumination from said camera light means; and

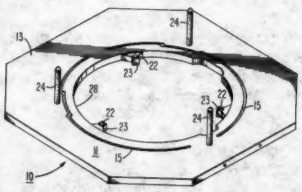
(d) means responsive to said sensing means for activating said light source in response to said illumination.

4,609,285

WAFER SUPPORT PLATE FOR PHOTOLITHOGRAPHIC APPARATUS

Gerard Samuels, Paoli, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 30, 1985, Ser. No. 770,977
Int. Cl.[4] G03B *27/62*
U.S. Cl. 355—75 **9 Claims**



1. In a photolithographic apparatus, a plate for supporting a wafer in an imaging position relative to a mask for processing in the apparatus, said wafer having a surface comprising brittle material, said plate having three tabs disposed within the peripheral surface of an aperture in said plate, each tab having a hole within which is positioned a body having a smoothly curved surface, each of said bodies being arranged to contact tangentially a surface portion of said wafer whereby relative

movement of the wafer and said tabs causes substantially no discernible abrasion of material from the surface of the wafer.

4,609,286

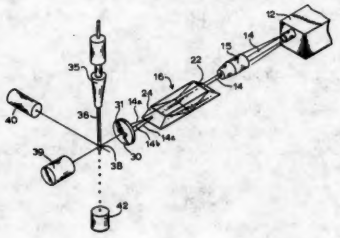
DISPERSION PRISM FOR SEPARATION OF WAVELENGTHS OF SPECTRALLY RICH LIGHT IN A FLOW CYTOMETRY APPARATUS

Burton H. Sage, Jr., Raleigh, N.C., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Apr. 16, 1984, Ser. No. 600,245

Int. Cl.[4] G01N *21/64, 21/27, 21/53*

U.S. Cl. 356—73 **11 Claims**



1. A flow cytometry apparatus for determining characteristics of cells or the like flowing in a liquid stream comprising:

means for moving cells, substantially one at a time, in a liquid flow stream;

an excitation light source for providing a beam of spectrally rich light directed toward said cells moving in said flow stream;

a light transmissive dispersion prism, positioned in the path of said light beam between said source and said flow stream, capable of spatially separating said spectrally rich light into a plurality of wavelength components thereof and directing said separated components in different directions so that one or more of said components may selectively illuminate said cells moving in said flow stream, said dispersion prism having a plurality of smaller light transmissive prisms arranged in contact with each other along a relatively elongate longitudinal axis;

a light barrier with a slit therethrough, positioned in the light path between said dispersion prism and said flow stream, for blocking some components of separated light and for allowing at least one spatially separated component of light to pass through said slit for illuminating the cells in said flow stream, said light barrier being a light absorbing member to absorb light striking same, said slit being aligned with said at least one spatially separated component of light which exits said prism to permit said component to pass through said barrier;

means for detecting light associated with each moving cell as it passes through said area of illumination; and

means for using said detected light to determine one or more characteristics of said cells.

4,609,287

METHOD OF AND APPARATUS FOR MEASURING REFRACTIVE CHARACTERISTICS

Yoshimi Kohayakawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1983, Ser. No. 503,234

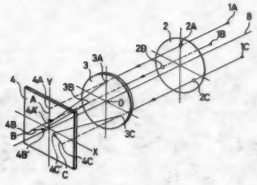
Claims priority, application Japan, Oct. 5, 1982, 57-175847; Mar. 9, 1983, 58-39804; Mar. 28, 1983, 58-52197; Apr. 13, 1983, 58-66254

Int. Cl.[4] G01B *9/00*

U.S. Cl. 356—124 **8 Claims**

1. A method of measuring refractive characteristics of an optical element to be measured, said method comprising the steps of:

applying at least three light beams to different positions on the optical element to be measured, receiving the light beams coming via said optical element to be measured by a light position detecting element and detecting at least three deviation vectors indicative of the degrees of deviation of said light beams;



calculating the refractive characteristics in at least three predetermined meridian directions from said deviation vectors; and

specifying the degree of astigmatism, the direction of astigmatism and the refractive power from the refractive characteristics in said three meridian directions.

4,609,288

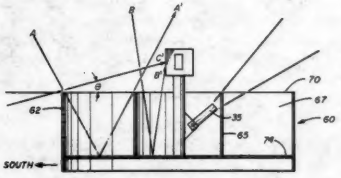
DIRECT RAY SOLAR METER AND METHOD

Robert J. Dodge, Box 19781, Houston, Tex. 77224

Filed May 26, 1983, Ser. No. 498,534

Int. Cl.[4] G01J *1/42*

U.S. Cl. 356—218 **10 Claims**



2. A method for measuring the intensity of the direct rays of the sun, comprising:

independently measuring the light incident on each side of two substantially mutually perpendicular planes both substantially perpendicular to the earth's surface at the location of the measurement,

shielding said planes from reflected radiation from the earth's surface,

measuring the light downwardly incident on a third plane substantially parallel to the earth's surface at the location of the measurement,

measuring only the diffuse radiation incident on the third plane,

determining the values of the differences of the respective pairs of measurements made on each of the three planes, and

determining the value of the direct rays by determining the square root of the sum of the squares of the three difference values.

4,609,289
SPECTROMETER

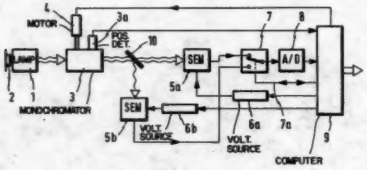
Hermann Ritzl, Hauptstrasse 60, 8031 Seefeld 2, Fed. Rep. of Germany

Filed Jun. 22, 1984, Ser. No. 623,751

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1983, 3325659

Int. Cl.[4] G01J *3/02*

U.S. Cl. 356—326 **4 Claims**



1. A spectrometer comprising a light source for exciting a sample, a motor-adjustable monochromator, a secondary electron multiplier connected to an adjustable operating voltage source, with, on its output side, an A-D converter, and a computer which stores the output signals thereof and the associated wavelength and which controls the position of the monochromator and which regulates the operating voltage source of the secondary electron multiplier in accordance with a stored relationship between the operating voltage and the spectral sensitivity of the spectrometer, with the wavelength of the radiation as adjusted at the monochromator, characterised in that disposed in the ray path between the monochromator (3) and the secondary electron multiplier (5*a*) is a beam splitter (10) which feeds a small fraction of the radiation energy to a second secondary electron multiplier (5*b*) which is also connected to an operating voltage source (6*b*) which can be regulated by way of the computer (9), that the outputs of the two secondary electron multipliers (5*a*, 5*b*) are connected to the input of the A-D converter (8) by way of a controllable electrical switch (7) whose control input is connected to the computer (9), and that the computer causes the monochromator (3) to pass through the spectrum to be investigated a plurality of times continuously in alternate directions, and, from the respectively stored individual values in respect of radiation intensity, after removal of the background noise, computes a mean value.

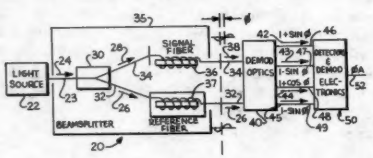
4,609,290
PASSIVE HOMODYNE DEMODULATOR AND SENSOR SYSTEM

Richard F. Cahill, El Toro, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jun. 6, 1983, Ser. No. 501,628

Int. Cl.[4] G01B *9/02*

U.S. Cl. 356—345 **16 Claims**



3. A sensor system using light as the sensing medium including:

a light source which produces a light beam of predetermined coherence;

first beamsplitter means which split said light beam of predetermined coherence into a reference light beam and a sensor input light beam;

means to impress the effect to be sensed on said sensor input light beam in the form of relative phase changes, ϕ, thereof with respect to said reference light beam to generate a sensor output light beam;

means to produce a relative linear polarization difference of 90° between said reference light beam and said sensor input light beam;

means to mix said reference light beam and said sensor output light beam; and

means to demodulate said mix of said reference light beam and said sensor output light beam into at least a first demodulated light beam having an amplitude which is a function of sin ϕ, wherein said means to demodulate said mix of said reference light beam and said sensor output light beam into at least a first demodulated light beam having an amplitude which is a function of sin ϕ also include:

means to demodulate said mix of reference light beam and said sensor output light beam into at least a second demodulated light beam having an amplitude which is a function of cos ϕ;

first polarized beamsplitter means which separate said mix of said reference light beam and said sensor output light beam into first and second predetermined component beams thereof;

second polarized beamsplitter means which separate said first predetermined component beams into third and fourth predetermined component beams;

third polarized beamsplitter means which separate said second predetermined component beams into fifth and sixth predetermined component beams;

means to combine said third predetermined component beams into said first demodulated light beam; and

means to combine said fifth predetermined component beams into said second demodulated light beam.

4,609,291
PHOTOELECTRIC ELEMENT CHARACTERISTIC MEASURING APPARATUS

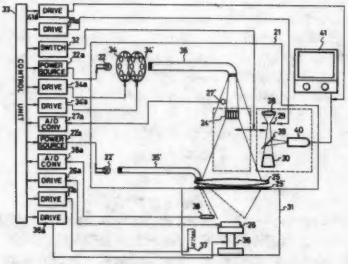
Toshiaki Takahashi, Tachikawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1984, Ser. No. 589,545

Claims priority, application Japan, Mar. 14, 1983, 58-42001; Aug. 30, 1983, 58-157101

Int. Cl.[4] G01J *3/51*

U.S. Cl. 356—418 **19 Claims**



1. A photoelectric element characteristic measuring apparatus having:

a first illuminating system comprising a first optical system for uniformly illuminating the whole area of a photoelectric element so as to cause generation of first information concerning photoelectric conversion on the element; and

a second illuminating system comprising a second optical

system for effecting an imaging illumination of a predetermined pattern on a part area of the element so as to cause generation of second information concerning photoelectric conversion on the element;

said first optical system and said second optical system using a part thereof in common.

4,609,292

DEVICE AND METHOD FOR MEASURING A TEMPERATURE DIFFERENCE

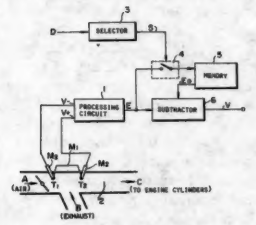
Masaharu Asano, Fujisawa; Yoshihisa Kawamura, and Toyoaki Nakagawa, both of Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Sep. 30, 1982, Ser. No. 430,727

Claims priority, application Japan, Nov. 2, 1981, 56-174555

Int. Cl.[4] G01M *15/00*; G01K *13/00*

U.S. Cl. 374—144 **13 Claims**



1. A device for measuring a temperature difference between different positions, comprising:

(a) first means for sensing a temperature difference between the different positions and for producing an output according to the sensed temperature difference between the different positions by utilizing the Seebeck effect, said first means comprising two different kinds of metals constituting a thermocouple, a first junction of the two metals located within an intake pipe of an internal combustion engine for detecting a temperature of intake air and a second junction thereof located downstream of the first junction thereof and interconnected with an exhaust gas recirculation pipe for detecting a temperature of intake air intermixed with exhaust gas from the exhaust gas recirculation pipe, so that a thermo-electromotive force according to the difference in temperature between the first and second junctions as the different positions of the thermocouple is produced;

(b) second means for sensing a predetermined condition which, if the predetermined condition is satisfied, always indicates no temperature difference between said first and second junctions of the thermocouple;

(c) third means for storing the value of the output from said first means when said second means senses said predetermined condition; and

(d) fourth means for subtracting the stored value of said third means from the current value of the output produced by said thermocouple so as to obtain a modified value accurately corresponding the current temperature difference.

4,609,293

LUBRICATION FEED BUSHING FOR ANTI-FRICTION BEARINGS

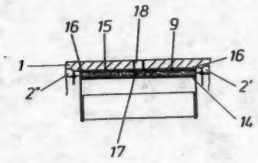
Oswald Bayer, Aidhausen; Martin Grehn, Dittelbrunn; Edwin Hey, Elfershausen; Hans-Karl Lorösch, Gochsheim, and Walter Vogel, Schweinfurt, all of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

Filed Apr. 26, 1984, Ser. No. 604,059

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1983, 3315644

Int. Cl.[4] F16C *33/66*

U.S. Cl. 384—469 **2 Claims**



1. A lubricating device for an anti-friction bearing on a shaft, wherein the bearing includes a shaft, an external bushing around the shaft and radially spaced therefrom and two circumferential rows of bearing balls which can roll around the shaft and which are axially spaced apart along the shaft;

a lubrication feed bushing disposed in the radial space between the shaft and the external bushing and in the axial space between the two rows of balls; the feed bushing being adapted to receive a supply of lubricant; the feed bushing having openings at the axial ends thereof toward the two rows of balls between which the feed bushing is disposed, so that the feed bushing delivers lubricant therein only at its ends in the direction toward the rows of balls; the feed bushing being resilient for permitting the shaft to be deflected with respect to the external bushing;

the feed bushing being comprised of two bushings of resilient material which are radially spaced apart, one closer to the shaft and the other closer to the external bushing, and the two elastic bushings are connected for defining the feed bushing; and further comprising a material which is elastic and porous for receiving and holding and dispensing lubricant and which is disposed between the radially inner and radially outer bushings of the feed bushing.

4,609,294

ADJUSTMENT OF PRINT POSITION

Günter Gomoll, Nersingen-Leibi, and Wolfgang Hendrischk, Neu-Ulm, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,875

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014823

Int. Cl.[4] B41J *25/30, 11/20*

U.S. Cl. 400—59 **3 Claims**

1. In a matrix printer, the combination comprising:

a print case;

a platen roller journaled in the case, there being means (i) defining and providing a physical representation of a roller position in the case;

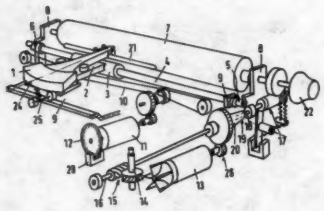
a frame slidably mounted in the case and in a first particular direction toward said platen roller;

a guide rod mounted on said frame;

a print head with carriage movably disposed on the rod, the rod extending transversely to said direction, said direction being parallel to a direction of printing by said head;

a drive for the print head, drivingly coupled to the head and being mounted on the frame; and

means (ii) on the frame for engaging said roller-position-defining means (i) to, thereby, establish a particular position of the frame and a particular distance as between the



print head as mounted by means of the carriage on the rod of the frame and the platen roller, at least one of the means (i) and (ii) being adjustable to, thereby, adjust said distance established upon said engaging.

4,609,295

HAND-HELD PRINTING CALCULATOR

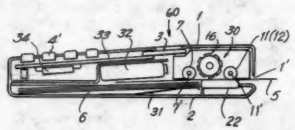
Tadayoshi Shimodaira, Shiojiri, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 136,229, Apr. 1, 1980, abandoned. This application Jan. 11, 1983, Ser. No. 457,296

Claims priority, application Japan, Apr. 10, 1979, 54-43318; Apr. 10, 1979, 54-47120

Int. Cl.⁴ B41J *3/36*

U.S. Cl. 400—88 **5 Claims**



1. A hand-held printing calculator for printing calculating results on paper strips stored flat within the calculator comprising:

case means for defining an interior space and including paper storage means for storing a plurality of paper strips;

calculator and printer circuit means within said interior space for performing calculating operations and generating corresponding print signals for printing the calculating results on a paper strip stored in said calculator;

print means in said case means for printing on said paper strips in response to said print signals when one of the paper strips is in a print position adjacent said print means;

paper advance means for continuously advancing a paper strip from the paper storage means to the print position, including first paper feeding means disposed before the print position and second paper feeding means disposed after the print position, said second paper feeding means advancing the paper strip at a faster rate than said first paper feeding means and the first and second paper feeding means disposed substantially in the same plane as the plane of the paper strip being advanced at the print position; and

biasing means for biasing said paper strip towards said first paper feeding means.

4,609,296

CHARACTER-CARRYING DISC FOR A PRINTING MACHINE

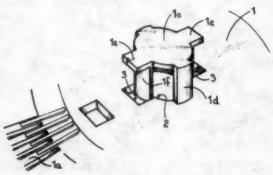
Eric Bauer, Neuchatel, and Blaise Moulin, Corcelles, both of Switzerland, assignors to Caracteres S.A., Neuchantel, Switzerland

Filed May 9, 1985, Ser. No. 732,188

Claims priority, application Switzerland, May 22, 1984, 2519/84

Int. Cl.⁴ B41J *1/30*

U.S. Cl. 400—175 **2 Claims**



1. A printing wheel disc having a body and a central hole in the body within which a drive shaft of a printing machine is received for mounting of the disc thereon, said body having a hollow central protrusion unitary therewith and capable of being engaged on the end of the drive shaft, said central protrusion comprising an outer portion generally coplanar with said body, rigid upstanding wall means normal to said body and connecting same to said outer portion, resilient depending tongue means proximate the outer portion and extending in a direction generally parallel to the axis of the central hole and including at least a pair of resilient tongue members disposed symmetrically about the central hole and having free ends terminating in the vicinity of said body, said tongue members capable of pressing resiliently on said drive shaft when the disc is translated in an axial direction toward said drive shaft and said outer portion is formed as a planar formation extending over the central hole and having at least a pair of outwardly extending rigid radial ears providing a purchase for grasping said central protrusion to enable engagement and disengagement of said disc onto the drive shaft.

4,609,297

PRINT AND CORRECTION RIBBON DRIVE SYSTEM

Manfred Hübner, Nuremberg, and Wilfried Rettke, Altdorf, both of Fed. Rep. of Germany, assignors to Triumph Adler AG, Nuremberg, Fed. Rep. of Germany

Filed Nov. 2, 1984, Ser. No. 667,577

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1983, 3341673

Int. Cl.⁴ B41J *35/23, 33/16, 29/26*

U.S. Cl. 400—187 **2 Claims**

1. A ribbon system for typewriters or like machines accommodating a print ribbon and a correction ribbon,

print ribbon raising mechanism,

print ribbon transport mechanism,

correction ribbon raising mechanism,

correction ribbon transport mechanism,

a bidirectional motor,

means consisting of a control circuit for energizing said motor to rotate from a home position in a first direction and return to home position in response to print commands to effect printing through said print ribbon, and for energizing said motor to rotate from a home position in a second direction and return to home position in response to correction commands to effect printing through said correction ribbon,

a first clutch part connected to be driven by said motor,

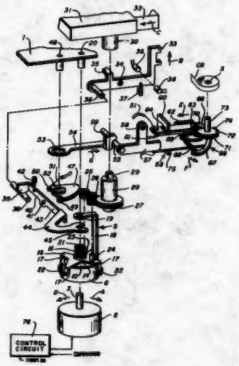
a second clutch part coupled to be first driven in an axial direction in response to rotation of said first clutch part in said first direction by said motor, and thereafter in a rotary

direction in response to further rotation of said first clutch part in said first direction,

means responsive to the axial movement of said second clutch part for driving said print ribbon raising mechanism,

means for sensing the raising of said print ribbon and for signalling said control circuit that said print ribbon is raised and, in response to said signal, causing said control circuit to effect further rotation of said motor in said first direction through an angle determined by the type of print ribbon in use,

an output gear on said second clutch part,



a third clutch part coupled to said first clutch part, said third clutch part carrying a first transmission gear engaging said output gear and being moveable thereabout for engagement with and thereafter to drive said print ribbon transport mechanism in response to said further rotation of said first clutch part in said first direction, and

said third clutch part including a second transmission gear engaging said output gear and being moveable thereabout for engagement with and to drive said correction ribbon raising and transport mechanisms in response to rotation of said first clutch part in said second direction.

4,609,298

TENSIONING MEANS FOR PRINTING RIBBON CASSETTE

Junji Shioda, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 10, 1984, Ser. No. 659,260

Claims priority, application Japan, Oct. 14, 1983, 58-159424[U]

Int. Cl.[4] B41J *32/00*

U.S. Cl. 400—208 **9 Claims**

1. A printing ribbon cassette comprising:

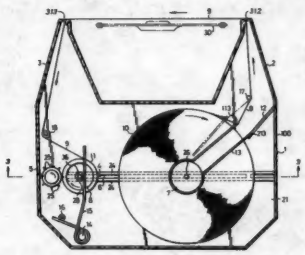
(a) a supply spool carrying a printing ribbon thereon, and having an axis of rotation which is movable as said ribbon is released from said supply spool;

(b) a take-up spool on which said ribbon released from said supply spool is wound;

(c) a casing accommodating said supply and take-up spools;

(d) a ribbon tensioner having a base end supported on a shaft for said supply spool and a pair of free ends, one of said free ends being engaged with said ribbon released from said supply spool to apply tension to said ribbon; and

(e) a guide means provided in said casing, the other of said free ends of said ribbon tensioner being movably engaged with said guide means in accordance with the displacement of said supply spool to enable said one end of said



ribbon tensioner to maintain a constant range of tension on said ribbon.

4,609,299

PRINTING APPARATUS

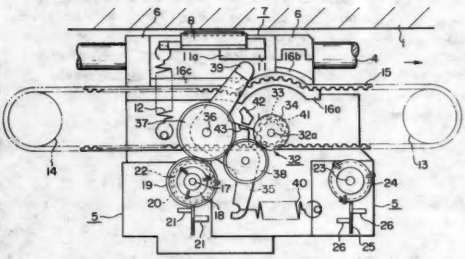
Shigenori Hattori, and Naohisa Kinoshita, both of Aichi, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Oct. 16, 1984, Ser. No. 661,446

Claims priority, application Japan, Oct. 20, 1983, 58-196908; Oct. 20, 1983, 58-196909

Int. Cl.[4] B41J *33/04*

U.S. Cl. 400—229 **9 Claims**



1. A printing apparatus comprising:

a platen;

a carriage movable in forward and reverse directions along said platen;

a print head mounted on said carriage so as to be movable relative to said carriage between a printing position and a non-printing position;

a ribbon cassette detachably mounted on said carriage, said ribbon cassette including a ribbon spool;

a spool shaft mounted on said carriage and being engageable with said ribbon spool to rotate the same;

a driving gear mounted on said carriage and being rotated in accordance with the movement of said carriage;

a driven gear mounted on said carriage and being connected to said spool shaft to rotate the latter;

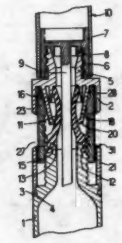
and a rotation transmitting mechanism adapted to operatively connect said driving and driven gears, operative connection between said driving and driven gears being released by the movement of said print head against said rotation transmitting mechanism as said print head moves to its non-printing position, and said driven gear being rotated in ribbon winding direction by a predetermined angle in response to the movement of said print head from its printing position to its non-printing position so that a used portion of said ribbon is prevented from being used again.

4,609,300

ADJUSTABLE WIPER FOR FLUID PRODUCT

Jean-Edouard Robert, Paris, France, assignor to Snap Duroc, Creuzier-le-Vieux, France

Filed Jul. 26, 1984, Ser. No. 634,754
Int. Cl.[4] A45D *40/00*
U.S. Cl. 401—122 5 Claims



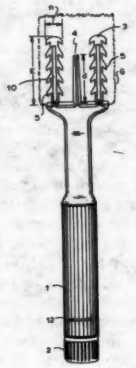
1. In an adjustable applicator for fluid product comprising a reservoir for the fluid product, a stopper carrying application means which is immersed in the fluid product when the reservoir is closed by the stopper, and wiping means for said application means, which forms a rigid ring, the diameter of which is adjustable, said application means being passed through said rigid ring when it is withdrawn from said reservoir, the improvement comprising a flexible sleeve of uniform cross-section, which extends through said rigid ring and is supported at its two ends by said reservoir, said flexible sleeve being constricted between its two ends by said rigid ring in order to be urged against said application means and said constricted sleeve presenting to said application means a progressively decreasing inner section which progressively compresses said application means as said application means passes through said flexible sleeve.

4,609,301

HOUSEHOLD-TYPE DISHWASHING UTENSIL

Jacques Benarrouch, 1, rue de Bruxelles, 69100 Villeurbanne, France

Filed Feb. 28, 1985, Ser. No. 707,942
Claims priority, application France, Feb. 29, 1984, 84 03343
Int. Cl.[4] B43M *11/06;* B05C *21/00*
U.S. Cl. 401—196 11 Claims



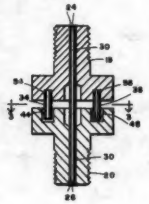
1. A washing and scrubbing utensil comprising:
a hollow elongated handle having a back longitudinal end, an opposite front longitudinal end and an interior;
a cap on said back longitudinal end;
two longitudinally forwardly projecting holding spikes on said front longitudinal end and each having opposite edges formed with sawteeth;
a central longitudinally forwardly projecting feed tube also on said front longitudinal end and communicating with said interior of said handle; and
a sponge fitted to said front end with said holding spikes and feed tube imbedded in said sponge and said sawteeth of said holding spikes poking into said sponge,
said spikes, feed tube and handle being unitary and together forming a one-piece element.

4,609,302

FLEXURE

David H. Kittell, 42 Ardsley Rd., Stamford, Conn. 06906

Filed Mar. 11, 1985, Ser. No. 710,555
Int. Cl.[4] F16B *7/10;* F16D *3/72*
U.S. Cl. 403—53 20 Claims



1. A flexure comprising:
(a) a first connector member having a bore located therein;
(b) a second connector member having a bore located therein, said connector member being axially spaced from said first connector;
(c) a wire which runs in said bores, connects said first connector member to said second connector member, and is integrally connected to said first and second connector members, said wire being thin relative to said first and second connector members, and sufficiently thin to substantially decouple torque by permitting the bending of said first connector member relative to said second connector around three axes, but providing stiffness against translational forces applied along the long axis of said flexure;
(d) mechanical stop means for preventing bending of said wire beyond a predetermined angle, wherein
one of said first and second connector members is arranged to connect to means for keeping said one of said first and second connector members stationary relative to the other connector member upon the application of torque to said other connector member.

4,609,303

SLIP-FORM FOR CONCRETE PATHWAYS

O. R. Shumaker, 9217 Parkside Dr., Sun Lakes, Ariz. 85224

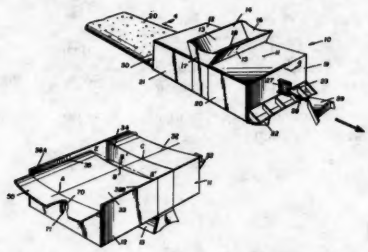
Continuation of Ser. No. 328,244, Dec. 7, 1981. This application Aug. 28, 1984, Ser. No. 645,521
Int. Cl.[4] E01C *19/22*
U.S. Cl. 404—105 6 Claims

1. A device for the continual slip-forming of concrete aggregate pathways upon a soil surface comprising a slip-forming body adapted to being conveyed in a forming direction across the surface of the soil, said slip-forming body including:
a forward soil-shaping portion;
a rearward concrete aggregate-shaping portion;
means rigidly joining said forward and rearward portions so that said forward portion is separated from said rearward

portion in said forming direction to thereby establish a feed chamber;

said forward portion including means defining a first surface which is smoothly and concavely curved about an axis parallel to said forming direction to initially contour the soil in response to conveyance of said device in said forming direction so as to establish a soil surface which is smoothly convexly curved about said axis;

said rearward portion including a leading edge, a trailing edge and means defining a second surface rearwardly of said first surface between said leading and trailing edges, said second surface being smoothly and concavely curved about said axis and also downwardly and rearwardly sloped between said leading and trailing edges relative to said forming direction, said trailing edge being vertically spaced above said convexly-curved soil surface so as to establish therewith a space corresponding substantially to a cross-sectional dimension of said formed pathway.



said rearward portion also including a pair of side walls which laterally bound said space thereby together defining the lateral extent of the formed pathway relative to said forming direction, wherein

said feed chamber permits the introduction of said aggregate concrete directly upon said convexly-curved soil surface which has been initially convexly contoured by means of said first surface; and wherein

said second surface defining means compacts and compresses said aggregate concrete introduced via said feed chamber, as said slip-forming body is conveyed in said forming direction, by virtue of said downwardly and rearwardly sloped orientation of said second surface relative to said forming direction to thereby continually form, at said trailing edge, said aggregate concrete pathway having a substantially uniform convexly curved cross-section conforming to said convexly curved soil surface by virtue of said concavely-curved second surface being vertically spaced thereabove.

4,609,304

APPARATUS FOR ENABLING A SELF-CONTAINED SUBMERSIBLE MODULE INCLUDING A LENGTH OF CONDUIT FOR CONNECTION TO A COLLECTOR TO BE REPETITIVELY PUT INTO PLACE AND REMOVED

Roland Labbé, and Jean-Luc Quistrebert, both of Saint Luce sur Loire, France, assignors to Alsthom-Atlantique, Paris, France

Filed Oct. 19, 1983, Ser. No. 543,559

Claims priority, application France, Oct. 26, 1982, 82 17871

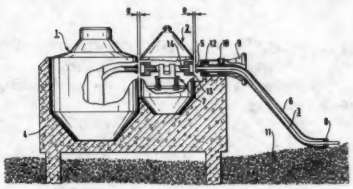
Int. Cl.⁴ E21B *43/013*; F16L *1/04*

U.S. Cl. 405—170 **2 Claims**

1. Apparatus for enabling a self-contained submersible module to be repetitively put into place and removed, the module having a base and including a length of conduit for connection at one end to a collector located on the water bottom, said length of conduit and said collector having mating ends, releasable connector means for establishing a connection between the length of the conduit and the collector when the ends to be connected come into end-to-end engagement fitted to the ends of said length of conduit and said collector, a carriage mounting said length of conduit, said carriage being mounted in said module for movement towards and away from the end of the collector to enable said length of conduit to be moved out from said module to bring said one end into contact with the end of the collector, and once the length of conduit has made connection with the end of the collector to enable said length of conduit to be moved in the opposite direction by pulling said collector with it, the improvement comprising:

a generally swan-necked, S-curved rigid sheath fixedly coupled at one end to said base and extending outwardly from said base in a direction away from said carriage,

said rigid sheath having a greater inside diameter than the outside diameter of the collector, said collector extending inside of said sheath and following a curved path of said



swan-necked, S-curved rigid sheath with limited play therebetween,

means for fixing said collector to said rigid sheath at the end of the sheath remote from the connection of said sheath with said module base, with the portion of the collector within said sheath being of a length in excess of the length of said sheath,

and wherein the diameter of said rigid sheath in excess of the outside diameter of the collector is such as to ensure sufficient play for the collector to move with the carriage when pulled by said length of conduit on the carriage in a direction away from said sheath and permitting the collector to be pushed back into the sheath when pushed by the length of the conduit on the carriage moving in a direction towards said sheath, irrespective of the collector being covered with seabed material.

4,609,305

FLOOR FOR USE IN OFF-SHORE TECHNIQUE AND SHIP BUILDING

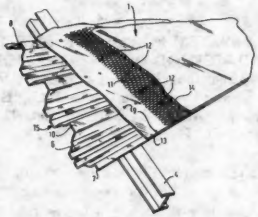
Dirk H. Groeneveld, Ridderkerk, Netherlands, assignor to 501 Beheermaatschappij H.D. Groeneveld B.V., Bolnes, Netherlands

Filed Aug. 19, 1983, Ser. No. 524,573

Claims priority, application Netherlands, Aug. 23, 1982, 8203288

Int. Cl.⁴ E02B *17/00*

U.S. Cl. 405—195 **10 Claims**



1. A floor for use in off-shore technique and ship building comprising a subfloor of gutter-shaped metal parts, a metal first

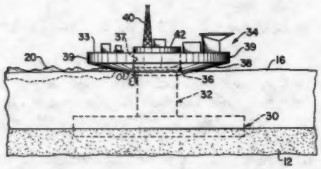
plate overlying the subfloor and bridging the gutter-shaped parts and rigidly connected with these parts to define a series of hollow, closed cylinders therewith possessing substantial resistance to bending, and a second plate overlying said metal first plate, said second plate comprising an expanded metal meterial and means connecting said expanded metal material as a unit with the metal first plate for converting loads bearing on said second plate into tractive forces in said metal first plate to add resistance to bending of said cylinders, said means comprising a surface layer portion of cured cast pressure-resistant material embedding said expanded metal material therein to bond said expaned metal material as a unit with the first metal plate.

4,609,306

ICE-BREAKING OFF-SHORE DRILLING AND PRODUCTION STRUCTURE

René Loire, San Francisco, Calif., assignor to Morrison-Knudsen Company, Inc., Boise, Id.

Filed Aug. 23, 1983, Ser. No. 525,688
Int. Cl.[4] E02B *17/00*; B63B *35/08*
U.S. Cl. 405—196 **25 Claims**



1. An ice-breaking drilling and production structure for use with an off-shore vertically disposed well shaft and the like having one end extending dowardly toward a sea floor and having an opposite end extending upwardly to a point above sea level, said structure comprising:

(a) a platform member having outer edges and a generally downwardly facing lower surface which slopes upwardly toward at least one outer edge thereof and adapted to be positioned on a shaft so that the sloping surface extends both above and below sea level; and

(b) means for flexibly connecting the platform to a shaft in a manner which will allow the platform to lift and/or to tilt with respect to the shaft as ice moves under the sloping generally downwardly facing lower surface to transfer part of the weight of the platform to the ice and thereby break the same.

4,609,307

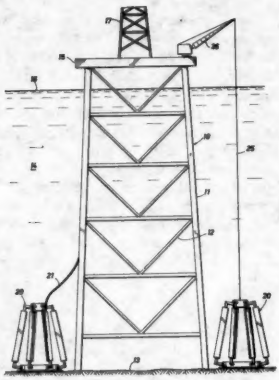
ANODE POD SYSTEM FOR OFFSHORE STRUCTURES AND METHOD OF INSTALLATION

Arthur L. Guy, and John R. Plugge, both of Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Nov. 5, 1984, Ser. No. 669,692
Int. Cl.[4] E02B *17/00*; C23F *13/00*
U.S. Cl. 405—211 **13 Claims**

1. An anode pod system for use with an offshore structure positioned on the ocean floor, comprising:

at least one anode pod having a lower tubular ring positioned on the ocean floor, an upper smaller tubular ring and a plurality of anodes, each connected to the upper and lower rings to form a connically-shaped unit, said anode pod being supported on the ocean floor and being outside the perimeter of the base of said structure; and



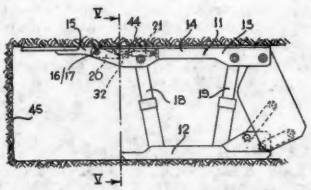
an electrical conductor cable means connecting said anode pod to said structure.

4,609,308

ROOF SUPPORT SUITABLE FOR USE IN MINES

Nigel Hill, Pershore, and Neville J. H. Sleigh, Malvern, both of England, assignors to Dowty Mining Equipment Limited, Tewkesbury, England

Filed Jul. 2, 1984, Ser. No. 626,682
Claims priority, application United Kingdom, Jul. 12, 1983, 8318806
The portion of the term of this patent subsequent to Apr. 23, 2002, has been disclaimed.
Int. Cl.[4] E21D *15/44*, *17/054*
U.S. Cl. 405—293 **11 Claims**



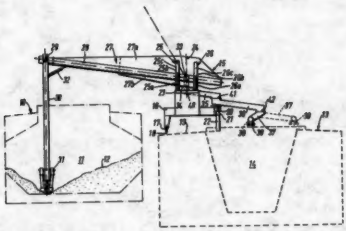
1. A roof support, suitable for use in mines, including a floor-engaging structure, extendable and contractible prop means carried by said structure, a roof-engageable canopy, supported by said prop means and comprising a main portion and an extension portion having a pivotal connection to said main portion, actuator means carried by said main portion, and a wedge member which is operable by said actuator means, which is disposed between and engageable with said main portion and a part of said extension portion projecting substantially beyond said pivotal connection towards said actuator means, and which is adapted arcuately to be movable by said actuator means, such arcuate movement effecting tilting of said extension portion with respect to said main portion.

4,609,309

PROCESS AND APPARATUS FOR THE TRANSPORT OF POWDERED OR PARTICULATE MATERIAL

Per T. Aralt, Bergen, Norway, assignor to Bergen Patentkontor, Bergen, Norway

PCT No. PCT/NO83/00040, § 371 Date Jun. 11, 1984, § 102(e) Date Jun. 11, 1984, PCT Pub. No. WO84/01562, PCT Pub. Date Apr. 26, 1984
PCT Filed Oct. 6, 1983, Ser. No. 619,599
Claims priority, application Norway, Oct. 11, 1982, 823392
Int. Cl.[4] B65G *53/48*
U.S. Cl. 406—56 5 Claims



1. A transport apparatus for transporting particulate material comprising

a transport pipe having an upwardly directed lower end and at least one laterally disposed feed opening in said lower end;

a feed arrangement for pushing particulate material laterally through said feed opening of said pipe, said feed arrangement including an internal lifting screw for lifting the material in tightly packed manner to said feed opening, an external screw element concentric to said lifting screw and a feed shovel below and between said screw element and said lifting screw to convey material from said screw element to said lifting screw; and

a compressed air pipe connected to said transport pipe below said feeding opening for directing an air current upwardly through said transport pipe to fluidize and lift particulate material fed into said transport pipe through said feed opening.

4,609,310

DRILLING MACHINE

Dietmar Blum, Höchst, Austria, assignor to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Jan. 23, 1985, Ser. No. 694,114
Claims priority, application Austria, Feb. 9, 1984, 412/84; Aug. 27, 1984, 2725/84
Int. Cl.[4] B23B *39/20*
U.S. Cl. 408—35 7 Claims

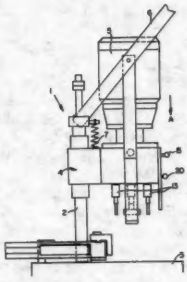
1. In a drilling machine for use in furniture production for drilling bore holes in a variety of furniture elements, said machine including a frame, a gear block mounted for reciprocating movement on said frame, a cylindrical drill spindle carrier mounted within said gear block and rotatable therein about a longitudinal center axis, a plurality of drill spindles mounted within said drill spindle carrier and having axes extending parallel to said center axis thereof, a driving motor mounted on said gear block for rotating one of said drill spindles, and pinions mounted on said drill spindles for transmitting rotation of said one drill spindle to the other said drill spindles, the improvement wherein:

said drill spindle carrier comprises upper and lower cover plates coupled to and spaced by a spacer disk;

said spacer disk has extending axially therethrough an interior passage defined by a plurality of connected axially extending recesses;

said drill spindles extend through said interior passage with each said recess having positioned therein one said drill spindle and the respective said pinion;

the contour of at least one said recess at least partially corresponding to the contour of the respective said pinion;



the diameter of said disk corresponds to the diameter of said drill spindle carrier; and

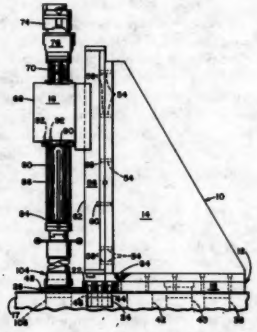
latch means for locking said drill spindle carrier in at least two relative positions with respect to said gear block about said center axis.

4,609,311

STUD HOLE BORING AND TAPPING MACHINE

William H. Pettyjohn, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 23, 1983, Ser. No. 535,178
Int. Cl.[4] B23B *41/14*
U.S. Cl. 408—79 5 Claims



1. A portable apparatus for performing machining operations at a precisely located site on a work surface having a plurality of openings formed therein with at least some of the plurality of opening being threaded comprising:

a. fixture means operative for securing the apparatus to the work surface such that the apparatus bears a predetermined relationship to the precisely located site on the work surface, said fixture means including a tie down plate, at least one tie down plug, at least one tie down disc and a first plurality of threaded fasteners, said tie down plate having a plurality of counterbored openings formed therein bearing the same orientation as the plurality of openings formed in the work surface, said tie down plate being positioned on the work surface in superimposed relation thereto such that said plurality of openings of said tie down plate are aligned with the plurality of openings of the work surface, said tie down plug being substantially

circular in configuration and having threads formed around the circumferential external surface thereof, said tie down plug having a diameter corresponding to the diameter of at least the threaded ones of the plurality of openings formed in the work surface, said tie down plug further having a plurality of threaded openings bearing a predetermined relationship one to another formed at least partially therethrough and so as to extend axially thereof, said tie down plug being threaded into a threaded one of the plurality of openings formed in the work surface, said tie down disc being substantially circular in configuration and having a first portion and a second portion, said first portion of said tie down disc having a diameter corresponding to the diameter of the counterbored portion of said plurality of openings formed in said tie down plate, said second portion of said tie down disc having a diameter substantially the same as the diameter of said tie down plug, said tie down disc having a plurality of unthreaded openings bearing the same orientation one to another as do said plurality of threaded openings formed in said tie down plug and so as to extend axially thereof, said tie down disc being seated in one of said plurality of openings formed in said tie down plate such that said first portion of said tie down disc is positioned in the counterbore of one of said plurality of openings formed in said tie down plate and said second portion of said tie down disc is positioned in the uncounterbored portion of said one of said plurality of openings formed in said tie down plate, said first plurality of threaded fasteners extending through said plurality of unthreaded openings formed in said tie down disc and being threaded into said plurality of threaded openings formed in said tie down plug so as to fixedly secure said tie down disc and thereby also said tie down plate to said tie down plug and therethrough to the work surface such that the portable apparatus is properly positioned relative to the precisely located site on the work surface;

b. support means positioned on said fixture means so as to bear a predetermined relationship to the precisely located site on the work surface, said support means including an angle support bracket, a support member and a second plurality of threaded fasteners, said angle support bracket having a first base member, a second base member having a length greater than said first base member and an upstanding triangularly shaped member integrally joined to said first base member and said second base member, said first base member being positioned on said tie down plate in superimposed relation thereto and so that said second base member lies in a first plane that bears a predetermined relationship to the precisely located site on the work surface, said support member being secured on said second base member in superimposed relation thereto, said second plurality of threaded fasteners fastening said first base member to said tie down plate; and

c. operating means movably mounted on said support means, said operating means including a first operating means supported on said support member for movement relative thereto in said first plane and second operating means operatively secured to said first operating means for movement therewith, said second operating means being operative to perform selected machining operations at the precisely located site on the work surface.

4,609,312

APPARATUS FOR IN-SITU CRANKSHAFT RECONDITIONING

Anatoly Sverdlin, 2018 Willow Wisp, Seabrook, Tex. 77586

Filed Nov. 15, 1984, Ser. No. 671,635

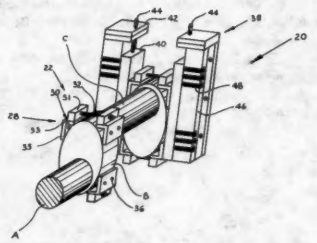
Int. Cl.[4] B23C *1/00*

U.S. Cl. 409—132 **23 Claims**

1. An apparatus for in-situ crankshaft reconditioning comprising:

a bracket including a clamping mechanism securable to the crank webs of a crankshaft to be reconditioned, said mechanism including two pairs of four spaced apart clamping elements, each adapted to contact a crank web at two spaced points;

a pair of spaced apart orbital wheels mounted on said



bracket and arranged to encircle a crankshaft to be reconditioned; and

a machining tool supportable between said wheels and rotatable with said wheels.

4,609,313

BOX HAVING MEANS FOR GUIDING AND LOCKING WHEELED PALLET

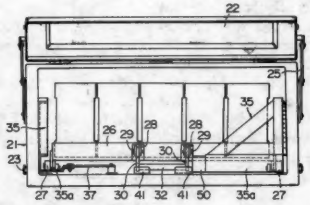
Masao Oshino, and Yasuhiko Nakatani, both of Kakogawa, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe and Yashiro Kako Ltd., Hyogo, both of, Japan

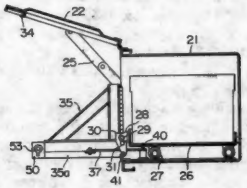
Filed Jul. 25, 1984, Ser. No. 634,137

Claims priority, application Japan, Aug. 2, 1983, 58-120494[U]; Aug. 2, 1983, 58-120495[U]

Int. Cl.[4] B60P *3/00*

U.S. Cl. 410—67 **2 Claims**





1. A box formed with an opening at its front end to allow a wheeled pallet having articles placed thereon to be moved horizontally therethrough to be inserted into and withdrawn from the interior of the box, and having a lid hingedly connected to the front end of the box to move between an open position and a closed position to open and close the opening of the box comprising:

a pair of retractable guide rails for guiding said wheeled pallet in its movement into and out of the box, said pair of retractable guide rails each being supported at a respective one of two side walls of the box defining said opening for pivotal movement about a vertical axis;

link means connecting said pair of retractable guide rails and said box together, said link means being capable of moving said pair of retractable guide rails between inoperative positions inside the box in which they are parallel to the lid disposed in its closed position and operative positions outside the box in which they are at 90 degrees to the front end of the box and locking them in the 90 degree range from said inoperative to said operative positions, said link means enabling the pair of retractable guide rails to be unlocked and further moved pivotally to positions beyond the range of 90 degrees to allow the pallet to be removed from the box, said guide rails being supported for pivotal movement to positions beyond the range of 90 degrees.

2. A box formed with an opening at its front end to allow a wheeled pallet having articles placed thereon to be moved horizontally therethrough to be inserted into and withdrawn from the interior of the box and having a lid hingedly connected to the front end of the box to move between an open position and a closed position to open and close the opening of the box comprising:

a pair of clasps attached to a front surface of the pallet, each including a body pivotable about an axis parallel to said front surface and slidable along the length of the clasp;

a pair of stoppers attached to a bottom surface of the box, said pair of stoppers being located in positions corresponding to the positions of said pair of clasps and each having a vertical contacting surface facing the box; and

metal pushers attached to an inner surface of the lid in positions corresponding to the positions of said clasps to push said clasps;

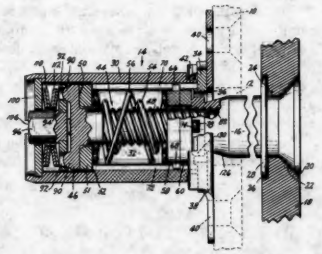
said clasps each having two contacting surfaces extending parallel to the length of the body of the clasp, one of said contacting surfaces facing the box and the other contacting surface facing in a direction opposite the box, and said contacting surface of each said clasp facing the direction opposite the box being movable into and out of engagement with the vertical contacting surface of the associated stopper while said contacting surface of each said clasp facing the box being movable into and out of engagement with a vertical contacting surface located on the front surface of the pallet, whereby when the contacting surfaces on the clasps are in engagement with the contacting surfaces on the stoppers and the pallet, the pallet is restrained from inadvertently moving out of the box.

4,609,314

PANEL FASTENER

Joseph R. Metz, Ridgefield, Conn., assignor to Norco, Inc., Georgetown, Conn.

Filed May 21, 1984, Ser. No. 612,268
Int. Cl.[4] F16B *31/00*
U.S. Cl. 411—7 **26 Claims**



1. A fastener for releasably securing a panel to an underlying supporting structure having an access opening, comprising in combination:

(a) a tubular housing having a longitudinal bore,

(b) means for securing said housing to the supporting structure, with the bore of the housing located at the access opening thereof,

(c) an elongate screw member carried in the housing bore, having a threaded portion extending toward an open end thereof and accessible from said access opening,

(d) said panel having an opening adapted to be located at the access opening in the supporting structure,

(e) a stud having a bore with internal threads adapted to mate with the threaded portion of the screw member when the panel is placed over the supporting structure with its opening adjacent said access opening and the stud engaged with and turned with respect to the screw member,

(f) detent means in said housing, adapted for engagement by the stud to prevent inadvertent rotation thereof with respect to the housing and consequent loosening thereof on the screw member under conditions of vibration,

(g) means providing a movable mounting for the screw member in the housing to enable both turning and axial movement to occur, and

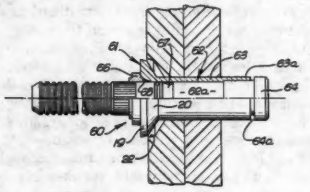
(h) a yieldable detent carried by the housing and engaging the screw member so as to normally restrain unrestricted turning movement thereof except under conditions of excessive torque, thereby reducing the likelihood of damage occurring to the screw member or stud from possible overtightening.

4,609,315

CORROSION RESISTANT DUAL TAPERED HEAD FASTENER AND PANEL COMPOSITE

Franklin S. Briles, 2640 Vista Pacific Dr., Oceanside, Calif. 92056-3599

Filed Mar. 19, 1984, Ser. No. 590,776
Int. Cl.[4] F16B *13/04*
U.S. Cl. 411—43 **21 Claims**



1. In combination with a composite workpiece having at least two panels and defining a bore and a counterbore, the counterbore and a portion of the bore located in one panel, another portion of the bore located in another panel,

(a) a corrosion resistant fastener having an axially extending shank received in and engageable with said bore and defining an axis, and the fastener having a flush countersink head,

(b) the head having an end face, a first section located forwardly of said end face and a second forwardly tapered frusto-conical section located forwardly of the first section, the included angle taper angularity 2B of the second section being between 105° and about 170°,

(c) the head first section having a side wall which has bearing engagement with a counterbore side wall of said workpiece to cooperate with bearing engagement of the shank with said workpiece bore to resist relative shear displacement of said panels,

(d) the head first section side wall having taper angularity A within the range 15° to 0°, A being greater within said range as the taper angularity 2B of the second section is lower, within its range 105° to 170°,

(e) said panels incorporating non-metallic filaments extending adjacent said bore portions,

(f) the head first and second sections having heights H_1 and H_2 respectively, the ratio of H_1 to H_2 being within the

range of about 1.0 to about 7.3, and said ratio decreasing within said range as 2B is lower within its range 105° to 170°,

(g) said head end face being outwardly domed substantially completely across its diameter.

4,609,316

DEVICE FOR FASTENING AN OBJECT AGAINST A WALL OR THE LIKE

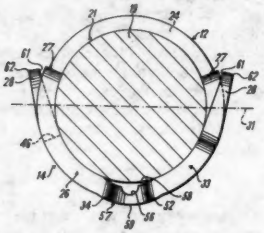
Reinhold Oettl, Nufringen, Fed. Rep. of Germany, assignor to Stumpp & Kurz GmbH & Co., Fed. Rep. of Germany

Filed May 30, 1984, Ser. No. 615,487

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1983, 3319902

Int. Cl.⁴ F16B *13/04*

U.S. Cl. 411—45 **34 Claims**



1. A device for fastening an object to a wall, or the like, as a plug-in mounting, comprising:

a bolt having an externally threaded portion at one end and an expander element mounting portion at the other end, the expander element mounting portion including a partially conical section, the maximum diameter of which is equal to the maximum diameter of the bolt;

a nut for threadedly engaging the threaded portions; and

an expander element including a pair of substantially half-shell parts held in a displaceable manner on the expander element mounting portion, each having a body part with front and back surfaces, opposed longitudinal edges and opposed transverse edges, each opposed longitudinal edge having at least two lobes formed thereon, such that each half-shell part is transversely symmetrical, and, when viewed in development, is point symmetrical, each said half-shell part further having:

(i) a notch formed in at least one transverse edge;

(ii) a weakening groove defined in one of the lobes formed on each longitudinal edge, said weakening groove extending over substantially the entire width of its respective lobe; and

(iii) a bevelled area defined in the other of the lobes formed on each longitudinal edge, said bevelled area being defined in at least one of said front and back surfaces.

4,609,317

FASTENING SYSTEM INCLUDING A PULL TYPE FASTENER FOR CONSTRUCTING ARTICLES SUCH AS SHIPPING CONTAINERS AND THE LIKE

Richard D. Dixon, San Juan Capistrano, and Marvin R. Hicks, Riverside, both of Calif., assignors to Huck Manufacturing Company, Irvine, Calif.

Continuation-in-part of Ser. No. 743,954, Jun. 12, 1985. This application Aug. 9, 1985, Ser. No. 764,842

Int. Cl.⁴ F16B *21/00*; **B21D** *39/00*

U.S. Cl. 411—339 **21 Claims**

1. In a fastening system for securing workpieces having aligned openings with at least one of the workpieces having a relatively soft core and another of the workpieces being of a relatively hard material with the workpieces being such that the opposite sides of the workpieces are separately accessible but simultaneously inaccessible by a single operator, said system comprising:

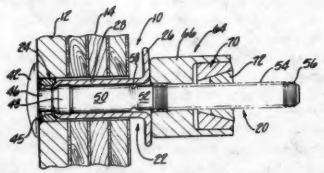
a fastener including a tubular sleeve and an elongated pin,

said sleeve having an enlarged sleeve head and an elongated sleeve shank and a through bore,

said pin having an enlarged pin head and a pin shank, said pin shank comprising a generally uniform shank portion, a reduced diameter lock groove adjacent said pin head, a pull portion located on the end of said pin shank opposite said pin head and adapted to be gripped by a tool for applying a relative axial force between said pin and said sleeve to set the fastener, and a breakneck groove being located between said pull portion and said shank portion.

a retaining clip being of a split construction and adapted to be located and axially captured within said lock groove, said retaining clip being generally non-deformable axially,

said retaining clip having a relaxed inside diameter greater than the diameter of said lock groove of said pin, said retaining clip having a relaxed outside diameter greater than that one of the aligned openings of that one of the workpieces of hard material and adapted to be radially compressed and located in that one of the aligned openings with an interference fit to provide a frictional connection to hold said pin and said clip in the workpieces in a pre-installed condition.



said retaining clip having a compressed inside diameter greater than the diameter of said pin lock groove to define therewith an annular lock cavity,

said frictional connection being sufficient to hold said pin and said clip to said workpieces as said sleeve is inserted over said pin shank and the tool is applied to said pull portion,

said sleeve shank having its free end engageable with said retaining clip and being radially deformed into said lock cavity in response to said relative axial force attaining a first preselected magnitude to thereby lock said pin and said sleeve together, said sleeve shank being adapted to deform radially outwardly in response to said relative axial force being of a second preselected magnitude greater than said first preselected magnitude to permit axial movement of said sleeve head into engagement with the confronting one of the workpieces, said sleeve shank deforming radially outwardly within the confines of the relatively soft core whereby radial outward deformation thereof is not inhibited,

said pin severing at said breakneck groove when said relative axial force attains a third preselected magnitude greater than said first and said second preselected magnitudes after said enlarged sleeve head has engaged the opposite one of the workpieces.

4,609,318

ROTARY PILER SYSTEM FOR SUGAR CANE

Kenneth J. Rodrigue, and Joe G. Worlow, both of Thibodaux, La., assignors to Cameco Industries, Inc., Thibodaux, La.

Filed Oct. 19, 1984, Ser. No. 662,764

Int. Cl.⁴ A01D *59/00*

U.S. Cl. 414—132 **17 Claims**

1. A piler system which push-piles sugar cane or the like for loading, comprising:

(a) a motorized vehicle used for loading sugar cane or the like having a frame; and

(b) piler means attached to said frame for push-piling and rolling the cane in front of said vehicle, said piler means including:

(i) a push piler assembly, and

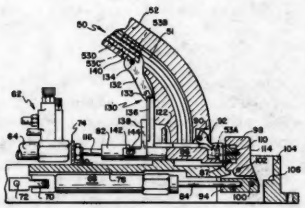
(ii) at least two, spaced, rigid, rotatable, kicker wheel portions having laterally extended tips associated with said piler assembly, the rotation of said kicker wheel portions with the laterally extended tips hitting the cane causing a lifting and beating action on the cane as it is being push-piled to better form a large pile of cane and to dislodge dirt, mud, and other foreign matter from the pile of cane.

4,609,319

COMPONENT DELIVERY SYSTEM

Carl Campisi, Chicago, and Richard G. Schmid, Glenview, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Sep. 14, 1984, Ser. No. 650,934
Int. Cl.[4] B65H *1/00*
U.S. Cl. 414—224 **22 Claims**



1. In the automatic assembly of a circuit board wherein electronic components having a plurality of conductive leads are positioned on said circuit board by insertion means, a component delivery system for positioning and orienting said components for engagement by said insertion means comprising:

delivery means containing a plurality of said components, said delivery means including an aperture through which said components are sequentially displaced by gravity;

component carriage means positioned adjacent said aperture for receiving components displaced therethrough;

component receiver means for engaging a component inserted therein and for positioning and orienting said component for engagement by said insertion means, said component receiver means including a removable insert uniquely configured for receiving the conductive leads of a given electronic component;

first control means coupled to said component carriage means for displacing said component carriage means and a component positioned thereon toward and in engagement with said component receiver means;

alignment means positioned on said component carriage means and movable therewith for engaging said component receiver means in aligning said carriage means with said receiver means when said component carriage means and a component positioned thereon are displaced by said first control means toward and in engagement with said component receiver means in ensuring proper insertion of said component therein; and

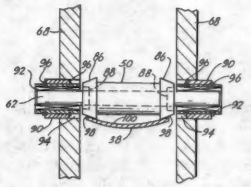
retaining means positioned adjacent to said carriage means for engaging a component following its displacement through said aperture and positioning on said carriage means whereby said component is stably maintained in a desired orientation thereon until engaged by said receiver means.

4,609,320

FLEXIBLE WORKPIECE TRANSPORTER AND ROLLER ASSEMBLY THEREFOR

Richard H. Rubin, 159 C Meriline Ave., West Paterson, N.J. 07424

Filed Jun. 20, 1984, Ser. No. 622,675
Int. Cl.[4] B65H *1/00*
U.S. Cl. 414—225 **22 Claims**



13. In a roller assembly adapted for use in combination with a flexible, extendable and retractable load arm made from a metal band having relatively sharp longitudinal edges and a concave cross-sectional shape, the improvement comprising a roller having a central portion out of contact with the load arm and a pair of tapered ends sized and shaped so as to contact a relatively smooth upper surface of said metal band but not the relatively sharp longitudinal edges thereof and mounting means for mounting said roller such that said roller is movable in a lateral direction conjointly with the load arm, whereby chafing of said roller by the relatively sharp longitudinal edges of the load arm is inhibited by inhibiting the load arm from moving laterally relative to said roller.

4,609,321

ROTARY CAR DUMPER WITH DUST COLLECTION SYSTEM

Willard Binzen, Gibsonia, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Oct. 29, 1984, Ser. No. 665,783
The portion of the term of this patent subsequent to Oct. 30, 1984, has been disclaimed.
Int. Cl.[4] B65G *67/50*
U.S. Cl. 414—291 **5 Claims**

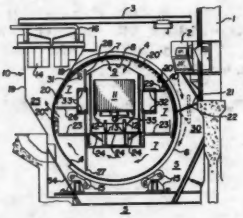
1. A rotary car dumper and dust collection apparatus comprising:

a rotatable frame comprising a pair of vertically oriented, horizontally spaced end rings connected by elongated members to form an open sided cylindrical frame with a horizontal longitudinal axis and having a section of railroad track extending through the frame parallel to said longitudinal axis, said frame including end plates at said end rings enclosing the ends of said cylindrical frame except for an opening through which a railroad car can pass through said frame on said section of track;

a hopper pit under said cylindrical frame for receiving bulk material carried by said railroad car, a portion of said cylindrical frame below said section of railroad track extending downward into said hopper pit;

means for mounting said cylindrical frame through said end rings for rotation about said longitudinal axis to dump bulk material over one side of said railroad car into said hopper pit;

fixed position enclosure means extending along each side and the top of said rotatable frame between the end rings to enclose the space between the sides of said hopper pit and the cylindrical sides of said rotatable frame, the spaces between the sides of the hopper pit and the sides of said fixed position enclosure means defining first and second air draft channels on opposed sides thereof;



dust collection means positioned in communication with at least one of said air draft channels; and

planar air shields mounted on said open sided rotatable frame and extending between said end rings parallel to the longitudinal axis of said frame, said planar air shields being arranged to form with the enclosure means as said cylindrical frame is rotated to dump the contents of said railroad car into the hopper pit, a rotatable valve which forms restricted openings above the hopper pit such that ambient air is sucked through these openings by the dust collection means at a velocity which exceeds the velocity required to capture a dust cloud created in the hopper pit and below the railroad car by dumping of the railroad car contents.

4,609,322

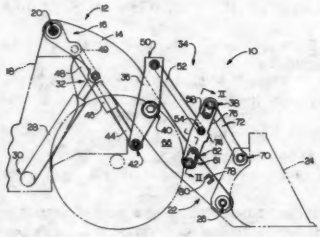
MOUNTING FOR A LINKAGE ARRANGEMENT

Wilton E. Quant, Bristol, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 13, 1984, Ser. No. 640,278

Int. Cl.[4] B66C *23/00*

U.S. Cl. 414—685 **15 Claims**



1. A mounting apparatus for a linkage arrangement adapted to be supported on an elongated support arm, having at least one bearing bore defined therethrough along an axis, comprising:

a pair of first and second elongated, laterally spaced tilt levers disposed in embracing relation to said support arm and having bore therethrough alignable with the bearing bore along said axis;

means for mounting the tilt levers to the support arm for relative rotation therewith about said axis, said means being snuggly journalled in said bearing bore and more loosely extendable through the bores in the tilt levers and being coupled to one of the tilt levers for rotation therewith; and

means for limiting the axial movement of said tilt levers along said axis while permitting limited rotation between said levers, said limiting means being coupled to the other of said levers for rotation therewith.

4,609,323

REMOTELY-CONTROLLED REMOTE HANDLING ARRANGEMENT FOR A LARGE-AREA CELL OF A NUCLEAR FACILITY

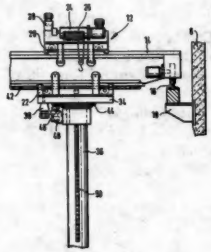
Klaus Blaseck, Burgdorf, and Lothar Hoffmeister, Hanover, both of Fed. Rep. of Germany, assignors to Deutsche Gesellschaft für Wiederaufarbeitung von Kernbrennstoffen mbH, Hanover, Fed. Rep. of Germany

Filed Oct. 22, 1984, Ser. No. 663,443

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1983, 3338687

Int. Cl.[4] B66C *19/02*

U.S. Cl. 414—663 **6 Claims**



1. Remotely-controlled remote handling arrangement for use in a large-area, radioactively-charged processing cell of a facility for reprocessing irradiated nuclear fuel materials, the arrangement comprising:

a remotely-controlled bridge crane mounted beneath the ceiling of the cell; the bridge crane including a bridge beam movable in a horizontal plane through the cell and above the process components of the processing cell;

a movable manipulator carrying apparatus arranged at an elevation beneath said bridge crane, the apparatus including:

a travelling chassis frame movably mounted on said bridge beam for movement therealong;

a vertical guide column assembly adapted to carry said manipulator means thereon;

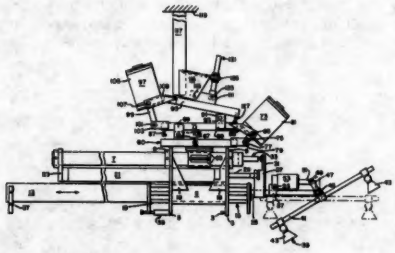
engaging means for detachably mounting said guide column assembly to said chassis frame; and,

drive means for driving said chassis frame along said bridge beam, said drive means including a track formed on said bridge beam so as to extend along substantially the entire length thereof and a drive motor fixedly mounted on said guide column assembly for engaging said track when said assembly is mounted on said chassis frame whereby said drive motor is removed with said assembly when the latter is disengaged from said chassis frame.

4,609,324
HORIZONTAL LOADER/UNLOADER

Cecil H. Sphar, Birmingham, Mich., assignor to Sahlin International, Inc., Birmingham, Mich.

Filed Jul. 17, 1984, Ser. No. 631,581
Int. Cl.[4] B66C *1/02*
U.S. Cl. 414—732 10 Claims



1. A heavy duty horizontal loader and/or unloader for industrial presses or the like comprising a frame, an elongated stroke member mounted on the frame for substantially straight line horizontal reciprocating movement between an extended press loading and unloading position and a retracted position, workpiece supporting means pivotally attached to an end of the stroke member and movable with said stroke member between said extending and retracted positions, pressure cylinder means mounted on the frame and operatively connected to the stroke member for moving it and the work supporting means between said extended and retracted positions, frame moving means to move at least a portion of the frame in a vertical direction when said workpiece supporting means is at said extended and retracted positions and including means for mounting the frame to tilt about a first horizontal axis adjacent said extended position, and first pressure cylinder means connected to the frame to tilt said frame about said first axis to thereby move the end of the stroke member and the work supporting means in a vertical direction at the extended position, said frame moving means including means for mounting the frame to tilt about a second horizontal axis spaced horizontally from the first axis in a direction away from said extended position and second pressure cylinder means connected to the frame to tilt it about said second axis to thereby move the end of the stroke member and the work supporting means in a vertical direction at the retracted position.

4,609,325
ROBOT WRIST

Gino Gabrielli, Paris, France, assignor to Automobiles Peugeot, Paris and Automobiles Citroen, Neuilly-sur-Seine, both of, France

Filed Dec. 21, 1984, Ser. No. 684,905
Claims priority, application France, Dec. 23, 1983, 83 20978
Int. Cl.[4] B25J *17/02*
U.S. Cl. 414—755 9 Claims

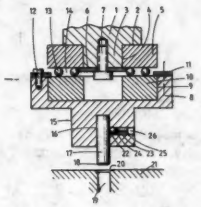
1. In a robot arm, wrist and end part arrangement for introducing a male part into a bore, the end of the part and/or the opening of the bore being chamfered, which comprises:

an arm;

an end piece adapted for carrying the male part; and

connecting elements fixed to the arm and the end piece allowing free movement of the end piece with respect to the arm and ensuring self centering of said end piece, said connecting means comprising:

two elements having axes and magnetized in the direction of their axes, which are interposed between the arm and the end piece and disposed so as to attract each other mutually; and

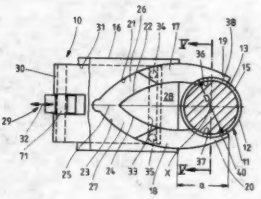


a plurality of balls interposed between and separating said elements from each other.

4,609,326
GRIPPING ARRANGEMENT

Hermann Roesler, Oberstenfeld, Fed. Rep. of Germany, assignor to Deutsche Industrieanlagen Gesellschaft mit beschraenkter Haftung Berlin, Berlin, Fed. Rep. of Germany

Filed Nov. 30, 1984, Ser. No. 678,012
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1983, 3343765
Int. Cl.[4] B23Q *3/157;* B65G *47/90*
U.S. Cl. 414—736 29 Claims



1. A gripping arrangement, particularly for manipulators, tool exchange devices and the like, comprising a housing; guiding means provided in said housing; two gripping fingers having gripping ends and moveable along said guiding means of said housing in a translatory reciprocating movement between a gripping position in which said gripping ends receive and hold therebetween an object having a diametrical plane and said gripping ends extend outwardly beyond said housing, and a releasing position in which said gripping ends release the object and said gripping fingers are withdrawn substantially completely into and without projecting beyond said housing, said guiding means including arcuate guiding tracks and guiding elements guided in and along the latter so that the movement of said gripping fingers includes a first rectilinear component extending in a direction toward the object to be gripped and a transverse component extending transverse to the first component and in a direction toward the object to be gripped, whereby each of said gripping fingers during its movement from said releasing position toward said gripping position performs a rectilinear movement in a direction toward the object on which said transverse component directed toward the object is superposed, said gripping fingers having an axis therebetween and said arcuate guiding tracks being arranged symmetrically relative to said axis, and said gripping ends of said gripping fingers having inner sides and being provided at said inner sides with gripping surfaces which face toward the object in said gripping position and each has a portion embracing the object before its diametrical plane and a portion embracing the object after its diametrical plane; drive means for

driving said gripping fingers in movement and including a joint drive, said drive having a slider reciprocatably moveable in said housing; and means for coupling each of said gripping fingers with said slider and including a coulisse guide.

4,609,327

SUBMERGIBLE PUMP

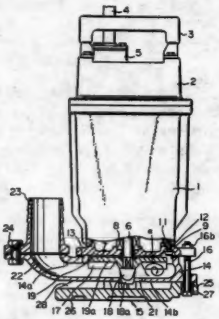
Sinji Nishimori, Kanagawa, Japan, assignor to Ebara Corporation, Tokyo, Japan

Division of Ser. No. 603,896, Apr. 24, 1984, Pat. No. 4,560,476. This application Oct. 4, 1985, Ser. No. 784,050

Claims priority, application Japan, Apr. 30, 1983, 58-66029[U]

Int. Cl.[4] F01D *15/00*

U.S. Cl. 415—121 B **3 Claims**



1. A submergible pump comprising:

(a) a motor section including a frame encasing a motor therein and an intermediate casing which, in use, separates the motor from water while allowing a motor shaft to extend therethrough;

(b) a pump impeller mounted on said motor shaft at a tip portion thereof extended through said intermediate casing;

(c) a pump casing provided with a discharge opening and a suction opening and adapted to be coupled to said intermediate casing and to encase said impeller; and

(d) a pump support couplable to said pump casing at the lowermost position of said pump and serving as a strainer for the pump;

(e) said support, said pump casing and said motor section being fastened together only with a plurality of bolts extending through the elements in the sequence noted, said support being provided with a plurality of bushings at the peripheral portions thereof, each of said bushings being cut off at one end to form a slot which prevents the associated bolt from being turned when the head of the bolt is received in said slot.

4,609,328

METHOD AND APPARATUS FOR TOTAL ENERGY SYSTEMS

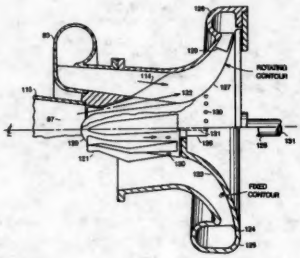
Anthony J. Cirrito, Grafton, Mass., assignor to CTP Partners

Division of Ser. No. 160,819, Jun. 18, 1980, Pat. No. 4,430,046. This application Nov. 25, 1983, Ser. No. 555,180

Int. Cl.[4] F04F *5/00*

U.S. Cl. 417—55 **34 Claims**

1. Apparatus for jet pumping comprising a primary nozzle coupled to a high temperature-high pressure combustion chamber, constructed for over two atmospheres and to withstand temperatures over **1500°** F. at least one secondary supply port substantially tangential to a quasi-doughnut shaped secondary supply housing, the axis of said housing being concentric with and attached to said nozzle, such that the inside diameter of the discharge annulus from said housing conforms in diameter with and attaches to the nozzle at some distance aft of the nozzle discharge extremity, and the outside diameter of said discharge annulus conforms with and attaches to the aft extremity of a cylindrical-to-diverging mixing tube for said jet pumping, said apparatus for jet pumping constructed to withstand combustion temperatures up to stoichiometric levels with said mixing tube discharge area designed for fluids flowing at subsonic velocities, and comprising further a secondary flow path of diminishing cross-section in said supply housing, a plurality of equally spaced radial vanes provided between the



outer wall of said nozzle and the inner wall of said mixing tube, the down stream extremities thereof terminating at some point down stream of said discharge annulus, the warp of said vanes shaped for directing centripetal flow in one direction and inclined toward increasing axial flow in the other direction, a teardrop-shaped body located on the center line of and partially inside of said nozzle extremity so as to form a primary annular discharge orifice, the axial cross-section of said orifice conforming the the requirements of up-to-supersonic primary discharge flows, said teardrop being held in place at the down stream extremity by suitable means.

4,609,329

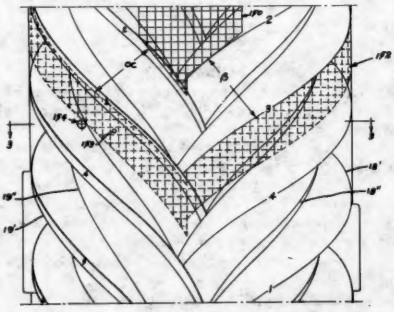
MICRO-PROCESSOR CONTROL OF A MOVABLE SLIDE STOP AND A MOVABLE SLIDE VALVE IN A HELICAL SCREW ROTARY COMPRESSOR WITH AN ENCONOMIZER INLET PORT

Joseph W. Pillis, Hagerstown, Md., and Hans C. Wile, Waynesboro, Pa., assignors to Frick Company, Waynesboro, Pa.

Filed Apr. 5, 1985, Ser. No. 720,323

Int. Cl.[4] F04B *49/06;* **F01C** *1/16*

U.S. Cl. 417—282 **12 Claims**



1. In a rotary screw compressor having a housing with a primary inlet means and an outlet means, a pair of mating rotors and slide valve means intermeshing with the rotors and housing and moveable to vary the capacity and volume ratio of the compressor, said rotors and said slide valve means forming

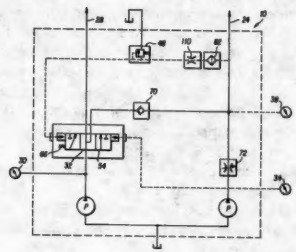
with the housing a succession of independent closed pockets whose volume varies from a maximum, in the pocket adjacent to the primary inlet means to a minimum in the pocket next adjacent to the outlet means, immediately before its connection with the outlet means, the improvement comprising, means for sensing the pressure in the pocket which immediately follows the pocket next adjacent to the outlet means, said pressure sensing means communicating with said pressure sensed pocket by port means in said housing, and means for using said sensed pressure to control the movement of said slide valve means.

4,609,330

MODULAR UNLOADING SEQUENCING SWITCHING VALVE ASSEMBLY FOR HYDRAULIC SYSTEM

Daniel T. Fahey, Columbus; William D. Butler, Jr., Powell, and Jack Kauffman, Columbus, all of Ohio, assignors to Federal Supply and Equipment Company, Hilliard, Ohio

Filed Apr. 4, 1985, Ser. No. 719,793
Int. Cl.[4] F04B *49/08*
U.S. Cl. 417—288 **31 Claims**



1. In a hydraulic system employing primary and secondary pumps for supplying fluid under pressure to a hydraulic circuit for use and control valve means connected to the primary and secondary pumps for controlling the flow of fluid to the hydraulic circuit, the improvement wherein said control valve means comprises,

a valve housing having primary and secondary fluid inlets adapted to be connected to the primary and secondary pumps, respectively, to receive pressure fluid from the pumps,

an elongated valve spool mounted for axial sliding movement in an elongated valve chamber in said housing, said valve spool having end walls cooperating with said valve chamber to define a fluid chamber at each end of said valve spool and a reduced diameter portion intermediate said end walls cooperating with said valve chamber tc define a movable secondary flow chamber in fluid communication with said secondary inlet,

a primary flow channel in said housing connected with said primary inlet and terminating in a primary outlet,

a removable flow sensing orifice assembly mounted in said housing, said orifice assembly including an adjustable orifice disposed in said primary flow channel for producing a pressure drop therein,

a first pilot fluid pressure passage extending between said primary flow channel upstream of said adjustable orifice and one of said fluid chambers and a second pilot fluid pressure passage extending between said primary flow passage downstream of said adjustable flow orifice and the other said fluid chamber,

first resilient means continuously biasing said valve spool toward said one fluid chamber,

a secondary discharge channel having one end communicating with said movable secondary flow chamber and its other end defining a secondary outlet,

a secondary fluid pressure passage extending between said movable secondary flow chamber and said primary fluid channel, and

one-way check valve means mounted in said secondary fluid pressure passage and operable to prevent the flow of pressure fluid from said primary flow channel to said movable secondary flow chamber,

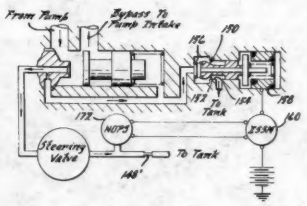
said first resilient means and the pilot fluid pressure in said other fluid chamber continuously urging said valve spool toward said one fluid chamber to direct pressure fluid from said secondary pump through said movable secondary flow chamber and said secondary pressure passage to said primary flow channel, said valve spool being moved toward said other fluid chamber by pressure in said one fluid chamber to thereby direct fluid from said secondary pump through said movable secondary flow chamber to said secondary discharge channel when flow through said adjustable orifice produces a predetermined pressure drop across the orifice.

4,609,331

SPEED SENSITIVE POWER STEERING VALVE

James J. Duffy, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 386,850, Apr. 16, 1982. This application Oct. 4, 1984, Ser. No. 657,559
Int. Cl.[4] B62D *5/06*; F04B *49/00*
U.S. Cl. 417—293 **2 Claims**



1. A power steering pump for use in a power steering system for a vehicle having fluid pressure controlling steering valve comprising:

a pressure regulating flow control valve for the power steering pump;

said pump having a high pressure flow delivery passage and a low pressure return passage;

said pressure regulating flow control valve being situated in and partly defining said circuit for establishing controlled communication between said high pressure passage and said return passge and including a movable valve element;

one side of said valve element being subjected to static pressure in said flow delivery passage and movable in a first direction by said static pressure to increase the communication between said flow delivery passage and said return passage, means for urging said valve element in the opposite direction to decrease said communication, a venturi passage in said flow delivery passage having a venturi inlet and a throat downstream of the venturi inlet, a cross-over passage connecting the venturi throat with another side of said valve element whereby a speed proportional pressure acts on said valve element urging said valve element in said opposite direction;

vehicle speed sensitive valve means for exhausting the speed proportional pressure on said other side of said valve element at speeds greater than a predetermined value whereby the flow control valve acts solely as a pressure regulator bypass valve;

said speed sensitive valve means comprising a relief valve that is normally closed and that communicates with said cross-over passage, and a solenoid actuator comprising an armature adjacent said relief valve adapted to open the

same when it is moved in one direction, and a solenoid winding circuit which, when energized, actuates said armature;

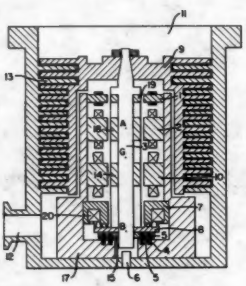
said solenoid actuator including a vehicle speed sensing module, a normally open pressure switch located on the downstream side of said steering valve, and a flow control orifice located downstream of said steering valve and said normally open pressure switch, said normally open pressure switch responding to a pressure increase upstream of said control orifice to open the solenoid winding circuit.

4,609,332

TURBO-MOLECULAR PUMP

Masaharu Miki, and Chiaki Urano, both of Tokyo, Japan, assignors to Seiko Seiki Kabushiki Kaisha, Chiba, Japan

Filed Nov. 18, 1983, Ser. No. 553,180
Claims priority, application Japan, Nov. 19, 1982, 57-203263
Int. Cl.[4] F04B *17/00*
U.S. Cl. 417—352 **6 Claims**



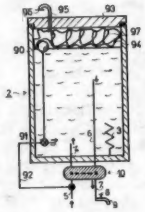
1. A turbo-molecular pump comprising: a housing having an inlet for introducing gaseous molecules during use of the pump and an outlet for discharging the gaseous molecules; a set of fixed blades fixedly mounted within the housing and extending radially thereof; a pump rotor rotatably disposed within the housing to undergo rotation about a rotary axis and having a tubular portion carrying a set of radially-extending blades which coact with the fixed blades to pump gaseous molecules from the inlet to the outlet during rotation of the pump rotor, the pump rotor together with the parts connected to rotate therewith having a center of gravity lying along the length of the pump rotor between the opposite axial ends thereof, magnetic bearing means disposed interiorly of the pump rotor tubular portion for magnetically rotatably supporting the pump rotor in the housing in a given balanced state, the magnetic bearing means comprising active magnetic radial bearing means disposed along the length of the pump rotor on one side of the center of gravity for actively controlling the radial position of the pump rotor along two orthogonal axes, active magnetic axial bearing means disposed along the length of the pump rotor on the other side of the center of gravity for actively controlling the axial position of the pump rotor along the rotary axis, and passive magnetic radial bearing means disposed on the said other side of the center of gravity and coacting with the active magnetic axial bearing means for passively controlling the radial position of the pump rotor; and driving means disposed interiorly of the pump rotor tubular portion for rotationally driving the pump rotor.

4,609,333

SYSTEM FOR HANDLING PRESSURIZED FLUIDS

Ruben Masel, Kiron, and George Valdshtein, Holon, both of Israel, assignors to Koor Metals Ltd., Holon, Israel

Filed Feb. 7, 1985, Ser. No. 699,142
Claims priority, application Israel, Feb. 24, 1984, 71058
Int. Cl.[4] F04B *43/06*
U.S. Cl. 417—393 **12 Claims**



1. A fluid handling system comprising a container including an inlet connectable to a pressurized fluid supply line and an outlet connectable to a pressurized fluid outlet line including a control valve; and a pressure-booster including a motor driven by the inletted fluid when the control valve is open to thereby decrease the pressure of the fluid within the container, and a pump driven by the motor to pump out the fluid from the container at a higher pressure than the pressure of the fluid within the container; characterized in that:

said pressure-booster includes a diaphragm seal positively sealing the inletted fluid from the outletted fluid;

said pump has a greater displacement than said motor such that the operation of the pressure-booster tends to deplete the container; and

said system further includes a bypass from the pressurized fluid supply line to the interior of said container bypassing said pressure-booster for replenishing the fluid in the container.

4,609,334

SCROLL-TYPE MACHINE WITH ROTATION CONTROLLING MEANS AND SPECIFIC WRAP SHAPE

Earl B. Muir, Sidney; Russell W. Griffith, Troy, and Gerald W. Lilienthal, Sidney, all of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Continuation-in-part of Ser. No. 452,516, Dec. 23, 1982, abandoned. This application Mar. 3, 1983, Ser. No. 471,743
Int. Cl.[4] F01C *1/04, 21/04*
U.S. Cl. 418—55 **71 Claims**

1. A scroll-type machine comprising:

a first scroll member having a first spiral wrap of generally involute shape;

a second scroll member of generally involute shape having a second spiral wrap and being mounted for movement with respect to said first scroll member,

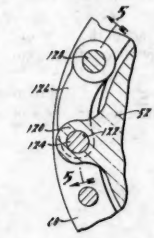
said second wrap being intermeshed with said first wrap so that when said second wrap is moved with respect to said first wrap along a predetermined path at least two fluid pockets of progressively changing volume are formed; and

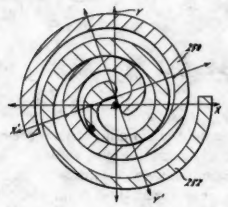
means for causing said second wrap to move along said predetermined path, including:

drive means for causing a portion of said second scroll member to move in an orbital path with respect to said first scroll member, and

rotation controlling means for restricting rotational movement of said second scroll member, said rotation controlling means comprising a link having one portion pivotally connected to said second scroll member and another

portion mounted for rotation about an axis which is fixed with respect to said first scroll member, the effective





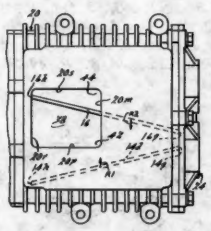
length of said link being greater than the radius of said orbital path.

4,609,335

SUPERCHARGER WITH REDUCED NOISE AND IMPROVED EFFICIENCY

Loren H. Uthoff, Jr., Canton, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 20, 1984, Ser. No. 652,536
Int. Cl.[4] F01C *1/08, 1/16*
U.S. Cl. 418—201 **13 Claims**



1. In a rotary blower of the backflow-type including a housing defining two parallel, tranversely overlapping, chambers having cylindrical wall surfaces; an inlet port and an outlet port openings having longitudinal and transverse boundaries defined in opposite sides of the housing with the transverse boundaries of each port disposed on opposite sides of a plane defined by the intersections of the chambers; meshed, lobed rotors disposed in the chambers with the lobes of each rotor having top lands sealingly cooperating with the cylindrical wall surfaces of the associated chamber and operative to traverse the port boundaries disposed on the associated side of the plane for effecting transfer of volumes of compressible inlet port fluid to the outlet port via spaces between adjacent, unmeshed lobes of each rotor; the lobes being formed with a helical twist, whereby each land is helical and has a lead end and a trailing end inthe direction of rotor rotation; the improvement comprising:

the inlet port opening skewed toward the lead ends of the lands;

the outlet port opening skewed toward the trailing ends of the lands, whereby said inlet and outlet port openings are skewed toward opposite ends of said rotors to maximize the number of rotational degrees that the helical lands of each transfer volume sealing cooperate with the cylindrical wall surface of their associated chamber; and

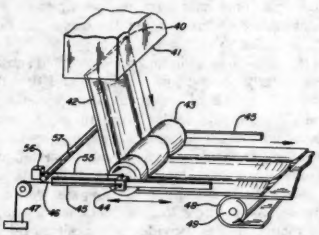
means defined by said helical lands and intersecting portions of said outlet port longitudinal and transverse boundaries on either side of said plane for controlling back flow rate of relatively high pressure outlet port fluid to the transfer volumes during initial traversal of said portions by the helical lands and for reducing travel distance of the backflow fluid, said intersecting portions disposed transverse to said helical lands while being traversed and initial traversal of said intersecting portions providing first communication between said high pressure outlet port fluid and said transfer volumes, and the intersection of said intersecting portions disposed substantially midway between the ends of said helical lands and traversed by said helical lands prior to traversal of said plane by the leads ends of said helical lands.

4,609,336

APPARATUS AND METHOD FOR EXTRUSION

James F. Stevenson, Hudson; Thomas E. Codispoti; Richard M. Griffith, both of Akron, and Harry L. Hutch, Stow, all of Ohio, assignors to GenCorp Inc., Akron, Ohio

Filed Oct. 17, 1984, Ser. No. 661,635
Int. Cl.[4] B29C *47/92, 49/78*
U.S. Cl. 425—135 **7 Claims**



1. An extrusion line having an extruder with a die for extruding a hot rubbery extrudate and a take-away conveyor to receive said extrudate from said die at a constant take-away speed, a controlled counterbalanced movable accumulator roll positioned directy between said die and said take-away conveyor for receiving said extrudate from said die, said accumulator adapted to move in the region between said die and said conveyor in response to variations in output of said extrudate from said die due to surges in said extruder, and to retract or extend said extrudate to compensate for the variable output from said die in order to provide a substantially constant rate of delivery of said extrudate to said conveyor and to maintain the dimensions of said extrudate as measured on said conveyor at nearly constant values, said accumulator roll being mounted on a shaft with linear bearings riding in parallel guide rails for horizontal reciprocation and wherein said bearings are connected to means to counterbalance the long-time-average horizontal component of the tension imparted to the accumulator roll by the extrudate.

4,609,337

APPARATUS FOR INSERTING MOLDS FILLED WITH A MONOMER MIXTURE INTO ROTATING POLYMERIZATION COLUMNS

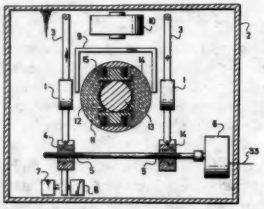
Otto Wichterle, Prague, and Vladimir Havlin, Roztoky u Prahy, both of Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Czechoslovakia

Filed Dec. 3, 1984, Ser. No. 677,255

Claims priority, application Czechoslovakia, Dec. 6, 1983, 9131-83; Jan. 31, 1984, 676-84

Int. Cl.[4] B29D *11/00*

U.S. Cl. 425—145 **8 Claims**



1. In an apparatus for polymerizing a dosed monomeric mixture in a mold subjected to rotation during said polymerization, said apparatus including a magazine for feeding said molds from a column of molds in said magazine, and a rotatable polymerizing column in which said polymerization takes place, an improved mold insertion device for inserting said molds by clamping and releasing said column of molds falling from said magazine comprising:

a body made of non-magnetic material and adapted to be secured to the lower end of said magazine and to the upper end of said column for coincidental rotation of said magazine, said column, and said body, said body having a first through-opening along a linear axis from said magazine to said column, said through-opening having a cross-sectional dimension greater than the transverse cross-sectional dimension of said molds,

a second through-opening in said body oriented substantially perpendicularly to said linear axis of said first through-opening and capable of accommodating jaw means,

jaw means mounted in said second through-opening for reciprocal movement between a clamping position against molds falling into said insertion device from said magazine and a release position which releases said molds, said jaws biased toward said clamping position, and said jaws having first means for providing magnetic attraction,

release actuating means provided at a position outside said body adjacent said jaw means, said release actuating means having a second means for providing magnetic attractions for magnetic counterpole interaction with said first magnetic means in said jaws sufficient to pull said jaws from said clamping position to said release position, whereby said mold clamped in said jaw means is released upon actuation of said release actuating means.

4,609,338

APPARATUS FOR PRESSURE MOLDING FIREBRICK

Shinji Nishida; Takashi Otsuka; Yoshio Nakamori, and Mitsukuni Sato, all of Okayama, Japan, assignors to Shinagawa Shirorenga Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1985, Ser. No. 696,903

Claims priority, application Japan, Feb. 15, 1984, 59-25100

Int. Cl.[4] B28B *17/00*

U.S. Cl. 425—149 **5 Claims**

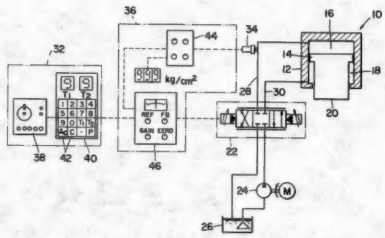
1. An apparatus for pressure molding firebrick, comprising:

(a) a press having opposed first and second fluid chambers to be selectively pressurized for respectively exerting pressure on, and releasing the pressure from, a mixture of desired brick ingredients in the form of fine particles in a mold;

(b) a source of fluid under pressure in selective communication with said fluid chambers;

(c) a directional control valve for selectively placing the opposed fluid chambers of the press in and out of communication with the pressurized fluid source and with a fluid drain; and

(d) control means for actuating the directional control valve to subject the mixture to vibratory motion from the press



while being held under a prescribed pressure, said control means initially actuating said valve to place said pressure source in communication with said first fluid chamber and direct the pressurized fluid from the source to the first fluid chamber until the press exerts the prescribed pressure on the mixture, said control means maintaining the mixture under the prescribed pressure and subsequently actuating said valve at rapid intervals to direct the pressurized fluid from the source to alternate fluid chambers of the press to compact the mixture rapidly to a required degree.

4,609,339

MATRIX MOLD FOR MAKING STACKABLE CONTAINERS

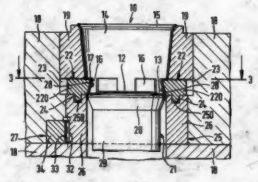
Pietro Padovani, Verona, Italy, assignor to Officine Meccaniche Veronesi SpA (O.M.V.), Parona, Italy

Continuation of Ser. No. 665,103, Oct. 26, 1984, abandoned. This application Oct. 3, 1985, Ser. No. 783,412

Claims priority, application Italy, Feb. 10, 1984, 84907 A/84

Int. Cl.[4] B29C *39/26, 49/48*

U.S. Cl. 425—383 **11 Claims**



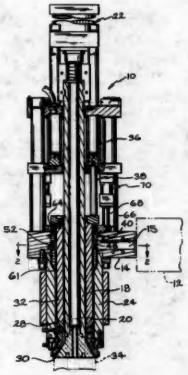
1. A matrix mold for use in manufacturing stackable containers, molded from plastic foil and cut-out, with at least one substantially truncated conical mold hollow space expanding upward, said mold comprising means defining a mold cavity having a bottom and a wall, the bottom of the cavity being provided by a head of an ejector; a plurality of at least three teeth slidably disposed in radial grooves open downward and arranged along the circumference at intervals in the lower part of said wall; and an eccentric arrangement for moving each of said teeth radially, said head presenting a larger diameter than the smallest diameter of the mold cavity.

4,609,340

ACCUMULATOR HEAD WITH DIVERTER SLEEVE

Christopher Irwin, Adrian, and Rudolf H. Poehlsen, Tecumseh, both of Mich., assignors to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Aug. 23, 1985, Ser. No. 768,585
Int. Cl.[4] B29C *49/04, 47/20*
U.S. Cl. 425—532 **3 Claims**



1. In an extrusion head, for extruding a tube of plastic material, which includes a die mandrel, a die body enclosing said die mandrel to define therewith an annular outlet orifice, an annular inlet orifice and an annular accumulation chamber in communication with and located between said inlet and outlet orifices, a piston movable in said accumulation chamber so as to discharge accumulated plastic material therein through said outlet orifice, a tubular diverter means supported in said die body exteriorly of said piston and defining with said die body a first flow splitter means and first opposite arcuate flow channels, said diverter defining means for joining said first opposite flow channels, said diverter also defining with said piston means for splitting flow from said means for joining and arcuate channels conducting flow in directions opposite that in said first arcuate channels and connected with annular channel means terminating in said orifice.

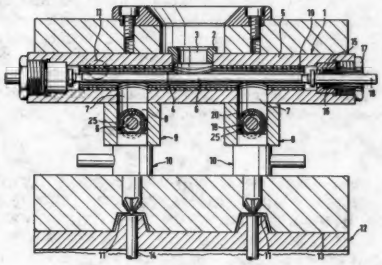
4,609,341

HOT-RUNNER TOOL FOR SUPPLYING MOLTEN PLASTIC TO AN INJECTION MOLD

Walter Müller, Battenberg, Fed. Rep. of Germany, assignor to Ewikon Entwicklung und Konstruktion GmbH & Co KG, Herford, Fed. Rep. of Germany

Filed Sep. 24, 1984, Ser. No. 653,991
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1983, 3335291
Int. Cl.[4] B29C *33/02, 33/38*
U.S. Cl. 425—547 **4 Claims**

1. In a hot-runner tool with at least one hot-runner section for supplying molten plastic to an injection mold, wherein the hot-runner section has an outer housing with a flow channel, at least one inlet, at least one outlet and a heat conductor in the housing connectable to an electric voltage and around which the molten plastic flows, the improvement wherein the hot-runner section further comprises at least one metal tube separated from the heat conductor and electrically neutral with respect to the heat conductor and externally demarcating the flow channel and a layer of heat insulation positioned between the metal tube and the inner surface of the outer housing, and wherein the metal tube has ridges that project outward and rest against the inner surface of the outer housing and perforations in the surface of the tube between the ridges for receiving molten plastic that flows in between the metal tube and the inner surface of the outer housing and solidifies there to form



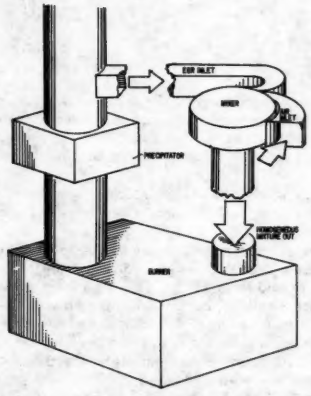
a layer of heat insulation, whereby the escape of heat stored in the metal tube from the molten plastic is reduced.

4,609,342

ABATEMENT OF NO_x FROM HETEROGENEOUS COMBUSTION SOURCES BY ULTRAHOMOGENEOUS AIR-EGR MIXING

Merle R. Showalter, Madison, Wis., assignor to Automotive Engine Associates, Madison, Wis.

Continuation of Ser. No. 457,019, Jan. 10, 1983, abandoned. This application Nov. 18, 1985, Ser. No. 799,549
Int. Cl.[4] F23B *7/00*
U.S. Cl. 431—2 **10 Claims**



1. A technique for achieving calculated NO_x reductions from EGR in heterogeneous combustion systems comprising

a burner where fuel and oxidizer are heterogeneously mixed and burned

and wherein the products of such burning are cooled to produce useful energy and said products of combustion, called exhaust gas are available in a duct at relatively moderate temperatures,

ducting means whereby a fraction of said exhaust gas is recycled into the intake air supplying said burner and whereby the mixing of air and EGR is accomplished with a vortex mixer wherein alternate layered bodies of air and EGR are introduced into the entrance upstream of the vortex so that the high shear structured turbulent mixing process of the vortex acts to produce microscale homogeneity for very large scale mixer sections.

where this homogeneous air EGR mixture is called oxidizer, and where this oxidizer is fed as the total oxidizer supply to the heterogeneous burner,

whereby the peak flame temperatures in the heterogeneous combustion process are lowered for all microvolumes in the burner and so that the rates of NO formation in all of these microvolumes are small so that the total NO_x output of the burner is suppressed to a level approximating the NO output which would be predicted calculating combustion with homogeneous microscale mixing of air and EGR and a statistical distribution of fuel oxidizer ratios.

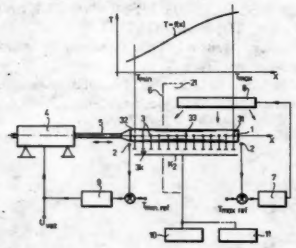
4,609,343
TEMPERATURE DISTRIBUTION REGULATING SAMPLE HOLDER-ADAPTER FOR FORMING CONDITIONS FOR GRADIENT HEAT TREATMENT IN HEAT TREATMENT OVENS OR FURNACES

Andras Tejfalussy, Lajos utca 115, H-1036 Budapest, Hungary

Continuation-in-part of Ser. No. 566,981, Dec. 30, 1983, abandoned, which is a continuation of Ser. No. 377,253, May 11, 1982, abandoned. This application Nov. 2, 1984, Ser. No. 667,773

Int. Cl.[4] **F27B** *1/26;* **G06F** *15/46;* **G05B** *23/30*

U.S. Cl. 432—36 **11 Claims**



1. Apparatus for forming the temperature gradient in environment of a workpiece arranged in a space of regulated temperature, comprising

a. a furnace with housing having an input opening at one side,

b. a heating element of regulatable power defining an inner zone of maximal temperature in the inner space of said furnace,

c. an inner temperature sensing unit coupled with said inner zone for generating a signal corresponding to the temperature of said inner zone,

d. a first regulating unit for adjusting power of said heating element according to said signals of said inner temperature sensing unit,

e. an adaptor closing the inner space of said furnace by close connection with said input opening, said adaptor being pushable into said inner space through said input opening, having an outer zone of minimal temperature and including a housing made of material of high thermal conductivity surrounding the workpiece between said outer and inner zones,

f. means for displacing said adaptor,

g. an outer temperature sensing unit coupled with said outer zone, moving together with said adaptor for generating a signal corresponding to the temperature of said outer zone,

h. a second regulating unit for adjusting displacement of said adaptor via said displacing means according to said signals of said outer temperature sensing unit and

i. a steady cooling system for cooling said adaptor from the side of said outer zone by a cooling substance circulated, wherein said first regulating unit controls the temperature of said inner zone of said furnace by adjusting power of said heating element and said second regulating unit controls the temperature of said outer zone by adjusting displacement of said adaptor, for forming the temperature gradient.

4,609,344
YARN HEATING CHAMBER

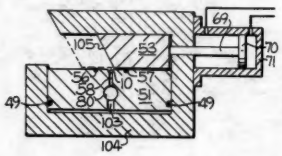
Walter Runkel, Hückeswagen; Erich Lenk, and Karl Bauer, both of Remscheid, all of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Division of Ser. No. 563,301, Dec. 19, 1983, Pat. No. 4,560,347. This application Oct. 10, 1985, Ser. No. 785,955

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1982, 3247040; Dec. 23, 1982, 3247626; Feb. 11, 1983, 3304752; Mar. 9, 1983, 3308251; Apr. 9, 1983, 3312823; May 21, 1983, 3318645; Jun. 11, 1983, 3321202; Jul. 22, 1983, 3326432; Oct. 15, 1983, 3336101

Int. Cl.[4] **F27B** *9/28;* **F26B** *13/00*

U.S. Cl. 432—59 **9 Claims**



6. A heating chamber for thermally processing an advancing yarn and which is characterized by stable temperature conditions which are substantially uneffected by a thread-up operation, and comprising

a first elongate plate having a generally flat surface, and a groove formed in said flat surface and extending along the longitudinal length thereof,

a second elongate plate having a generally flat surface,

means mounting said first and second members with said surfaces thereof in an overlying relationship and for movement along a direction which is generally parallel to the surfaces and transverse to the direction of said groove, and between an operative position wherein said surface of said second member overlies the groove in the surface of said first member to define a relatively narrow yarn passage and a threading position wherein said surface of said first member is positioned relative to the surface of said second member to define an enlarged opening to facilitate threading of a yarn, and

means for heating said first and second members.

4,609,345
TUNNEL KILN

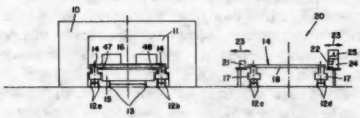
Paul Schröder; Klaus J. Schröder, both of Höhr-Grenzhausen, and Herrmann Krembeller, Nuremberg, all of Fed. Rep. of Germany, assignors to Ludwig Riedhammer GmbH, Fed. Rep. of Germany

Filed Jun. 5, 1985, Ser. No. 741,457

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1984, 3421365

Int. Cl.[4] **F27B** *9/26;* **F27D** *21/00, 3/00*

U.S. Cl. 432—137 **13 Claims**



1. A tunnel kiln particularly adapted for firing ceramic

workpieces with a firing channel including a heating zone, a firing zone, and a cooling zone, wherein a plurality of kiln car means bearing the workpieces to be treated are movable through said firing channel, the improvement wherein:

each of said kiln car means comprises a kiln car sole section extending along the bottom of the firing channel, and a kiln car carrying device extending along the bottom of the firing channel and constructed and arranged for carrying the workpieces to be treated.

and including first running leading means extending along the length of the firing channel below said kiln car sole sections for guiding said kiln car sole sections for movement through the firing channel, and

second running leading means extending along the length of the firing channel below said kiln car carrying devices for guiding said kiln car carrying devices for movement through the firing channel,

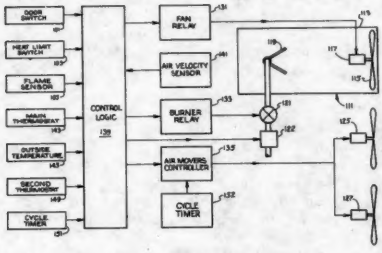
said first and second running leading means being separate from one another and parallel to one another so that said kiln car carrying devices are movable through the firing channel independently of said kiln car sole sections.

4,609,346

ENVIRONMENTAL CONTROL SYSTEM FOR LARGE VOLUME STRUCTURES

Frank J. Siccardi, 1228 Turquoise Dr., Modesto, Calif. 95356

Filed Jun. 24, 1985, Ser. No. 748,571
Int. Cl.[4] F24H *1/00*; F27D *19/00*
U.S. Cl. 432—222 **20 Claims**



5. An environmental control system for a large volume structure comprising

an air tempering unit including,

a fan,

an inlet duct for said fan,

a motor connected to drive said fan,

a gaseous fuel burner adapted for a high velocity combustion air stream placed upstream of said fan with combustion products from said burner being propelled through said fan,

an outside air intake in said structure placed to admit air from outside said structure to said duct upstream of said burner,

an inside air intake to said duct placed to supply air to the upstream side of said fan,

an air velocity sensor for detecting the volume air flow rate through said outside air intake, and

control means responsive to said air velocity sensor for causing fuel to be supplied to said burner only when said air velocity exceeds a predetermined value, and

a plurality of air movers in said structure at a level at least six feet higher than the output of said air tempering unit,

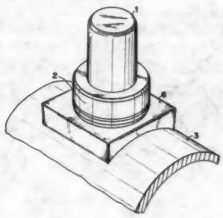
said air movers being oriented to provide a substantially horizontal air movement direction with at least a first one of said air movers being placed to direct air away from said air tempering unit and at least one other of said air movers being placed from 30 to 100 ft. forward of said first one of said air movers with its air movement direction colinear therewith.

4,609,347

SKID BUTTON STRUCTURE

Hajime Yamashita; Toshiyuki Hirao, and Masatoshi Yamazaki, all of Kariya, Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1985, Ser. No. 722,453
Claims priority, application Japan, Sep. 8, 1984, 59-166947
Int. Cl.[4] F27D *3/02*; F27B *9/14*
U.S. Cl. 432—234 **15 Claims**



1. A skid button for attachment to a skid pipe and for supporting steel thereon in a furnace, said skid button comprising:

a unitary ceramic button having a first cylindrical portion for supporting steel thereon and a second cylindrical portion of a diameter larger than that of said first cylindrical portion, said cylindrical portions being integrally formed as a single ceramic body;

attachment means, in the form of a cylindrical member, for attaching said ceramic button to a skid pipe, said cylindrical member having a bottom and a top opening, said second cylindrical portion being contained within said attachment means and spaced inwardly from the bottom of said attachment means to define a gap therebetween; and

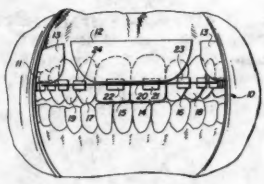
thermal insulating material disposed in said gap.

4,609,348

MOUTH AND CHEEK PROTECTOR

Arlene N. Rowland, Naples, Fla., assignor to James R. Rehak, Naples, Fla.

Filed Jul. 12, 1985, Ser. No. 754,279
Int. Cl.[4] A61C *7/00*
U.S. Cl. 433—2 **7 Claims**



1. A mouth and cheek protector for use in the mouth of a person having braces on his teeth comprising a thin elongated strip of sponge-like cellular material having the following characteristics:

(a) the cells of the sponge-like material have a generally uniform diameter of from 1/16th to 1/32nd of an inch,

(b) the major central portion of the strip has a thickness of approximately $\frac{1}{4}$th of an inch with its opposite ends tapered to a thickness of 1/16th of an inch,

(c) the height of the strip is approximately $\frac{3}{4}$ths of an inch, and

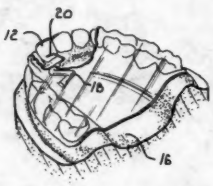
(d) one elongated edge of the strip is straight and the opposite ends of the other elongated edge of the strip are curved to intersect said straight edge.

4,609,349

ACTIVE REMOVABLE ORTHODONTIC APPLIANCE AND METHOD OF STRAIGHTENING TEETH

Steve B. Cain, 407 NW. Briarcliff Extension, Kansas City, Mo. 64116

Filed Sep. 24, 1984, Ser. No. 653,367
Int. Cl.[4] A61C 3/00
U.S. Cl. 433—6 12 Claims



1. A method of straightening teeth comprising: forming a thin sheet-like plastic overlay of the teeth, including the tooth to be straightened and at least some of the teeth on either side of said tooth, said overlay being of a thickness so as not to violate the freeway space between upper and lower occluding teeth surfaces;

providing a spring like tensioning member having the ability to undergo deformation while retaining its spring memory;

providing a resilient tubular member for at least partially encasing said tensioning member;

placing said tensioning member inside of said tubular member, a portion of the tensioning member being positioned for engagement with said tooth to be straightened;

securing said tubular member and said tensioning member to the surface of said overlay in a manner to cause one or more bends in both the tubular member and the tensioning member; and

placing said overlay inside of the mouth of a wearer with said portion of said tensioning member engaging said tooth to be straightened,

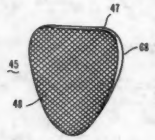
whereby said tensioning member effects movement of said tooth to be straightened while said overlay provides an anchor for holding the remaining teeth stationary.

4,609,350

LINGUAL RETAINER AND METHODS OF MANUFACTURING AND BONDING SAME

Frank W. Krause, 20 Pittsfield St., Cranford, N.J. 07036

Filed Jan. 9, 1985, Ser. No. 690,035
Int. Cl.[4] A61C 7/00
U.S. Cl. 433—7 28 Claims



1. A method of bonding a custom lingual retainer comprising the steps of:

accenting the mesial and distal ridges of the lingual fossa of a tooth by creating deeper internal rounded axial line angles.

modifying the cingulum within the lingual fossa to form a cingulum rest.

applying a bonding adhesive to a surface of a base of said retainer;

attaching a wire to said base, said wire extending beyond said base; and

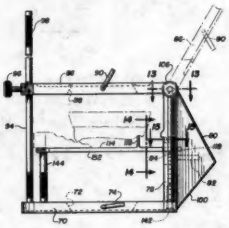
positioning said base in the lingual fossa of the tooth.

4,609,351

APPARATUS TO PRODUCE ARTIFICIAL DENTURES

John J. Blair, York, Pa., assignor to Dentsply Research & Development Corp., Milford, Del.

Division of Ser. No. 510,404, Jul. 1, 1983, Pat. No. 4,551,098.
This application May 20, 1985, Ser. No. 735,597
Int. Cl.[4] A61C 11/00
U.S. Cl. 433—55 10 Claims



1. A dental articulator for use in a method of forming a set of artificial upper and/or lower dentures, comprising in combination,

a. a lower bow comprising a base,

b. support members extending upward respectively from the opposite sides of said base,

c. an upper bow pivotally connected at the rearward end to the upper ends of said support members,

d. a post connected adjustably to the forward end of said upper bow for abutment with the forward end of said base,

e. a planar mounting table adapted to be detachably connected at the rearward end thereof to said support members intermediately between said base and upper bow,

f. a mounting bar extending perpendicularly from one surface of said table intermediately between opposite ends thereof and parallel to the rearward end of said table, and said mounting table being reversible selectively to dispose uppermost the surface with the mounting bar thereon or the opposite occlusal plane surface thereof,

g. an occlusal plane surface on the opposite surface of said table, and

h. a supporting pin detachably connected to the forward end of said planar mounting table for reversible positioning thereon for selective positioning to extend from either surface of said table and adapted to abut said base for support of the forward end of said table and position said table in substantially parallel relation to said base in either of said positions of said table.

10. A mounting table attachable to an articulator having a planar surface adapted to support an upper full arch set of artificial teeth for attachment to an upper dental model, and a positioning member for said set of teeth adjustably positionable upon said table and adapted to be abutted by the anterior teeth of said set of teeth to position the same incident to being attached to said upper dental model, said positioning member comprising a wedge block having a bottom surface adapted to rest adjustably upon the planar surface of said table and the upper surface being stepped and comprising a series of steps of progressively graduated heights above the bottom surface and

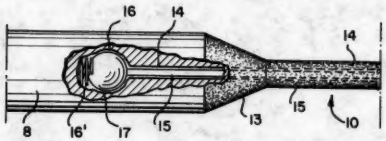
selectively adapted to be engaged by the anterior teeth of said set of teeth for support of the same at a desired level above said planar surface of said table.

4,609,352

RIGID DENTAL TOOL PROVIDED WITH INNER GUIDE CORE FOR CARRYING OUT THE REAMING AND RECTIFICATION OF DENTAL ROOT CANALS

Francesco Riitano, Via S. Giovanni Bosco, 11 - 88068 Soverato (Catanzaro), Italy

Filed May 11, 1984, Ser. No. 609,145
Claims priority, application Italy, May 25, 1983, 48369 A/83
Int. Cl.[4] A61C *5/02*
U.S. Cl. 433—102 10 Claims



1. A rigid dental tool for reaming and rectifying dental canals, comprising a first rigid longitudinally extending attachment portion, said first attachment portion being adapted for attachment to a drive means, a second rigid operating portion extending longitudinally from said first rigid portion for a predetermined distance, said second portion having an outer surface and inner surface, appropriate cutting means being on a major portion of the outer surface, a longitudinal cavity being defined by said inner surface and formed along the longitudinal axis of said second portion and at least a part of the longitudinal axis of said first portion, means to connect a flexible core to said first portion, one end of said flexible core extending through the cavity of said second portion and being freely slidable within said cavity, one end of said flexible core projecting a predetermined amount beyond said second rigid portion, said longitudinal cavity terminating in said first portion, said first portion defining a substantially cylindrical space, said cylindrical space being larger than the longitudinal cavity and said longitudinal cavity extending therefrom, a swelling formed at the other end of said flexible core with said swelling being located in said cylindrical space, a normal spring being located in said cylindrical space biased against said swelling and walls of the second portion which define said cylindrical space, said swelling and said spring and said cylindrical space being a predetermined size to provide a limited longitudinal elastic sliding path for said flexible core as well as an intermediate area between said swelling and walls of said space sufficient to provide independent rotation between the tool and flexible core.

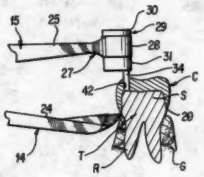
4,609,353

DENTAL APPARATUS FOR REMOVING CROWNS

Joseph M. Kline, 3501 N. Valley St., Arlington, Va. 22207

Filed May 31, 1985, Ser. No. 739,794
Int. Cl.[4] A61C *3/16*
U.S. Cl. 433—159 8 Claims

1. A dental apparatus for removing crowns from teeth comprising a pair of handle members which are integrally formed with outwardly extending first and second intermediate portions and first and second jaw portions, respectively, said intermediate portions being pivotally joined so that said first and second jaw portions are movable toward one another when said handle means are moved toward one another, said first jaw portion having a tapered tip which converges to an end point, said second jaw portion having a tip portion, a rotatable shaft carried by said tip so as to be rotatable about the elongated axis of said shaft which extends generally perpendicular to said second jaw portion, a pin means carried by said shaft and extending outwardly therefrom toward said first jaw portion and extending in spaced but generally parallel relationship to said elongated axis of said shaft whereby said pin means



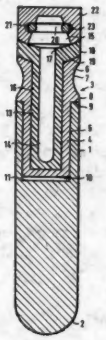
and said end point of said first jaw portion of said apparatus may be selectively aligned by the rotational reorientation of said pin means.

4,609,354

ENOSSAL IMPLANT FOR SECURING A TIGHT-FITTING TOOTH REPLACEMENT

Werner L. Koch, Liebenau, Fed. Rep. of Germany, assignor to Implanto-Lock GmbH, Fed. Rep. of Germany

Filed Apr. 5, 1985, Ser. No. 720,564
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1984, 3413578
Int. Cl.[4] A61C *8/00*
U.S. Cl. 433—173 10 Claims



1. An enossal implant for securing a tight-fitting tooth replacement in a cavity in the bone, comprising

a shaft for insertion in said cavity,

said shaft having a cylindrical blind bore in the upper end thereof,

a peg to one end of which said tooth is anchored,

said peg being larger in diameter than said blind bore and being made from a material which, at low temperatures, contracts sufficiently to permit insertion into or removal from said blind bore, and

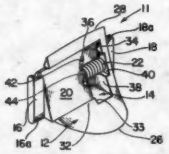
an extension from the other end of said peg disposed within said blind bore and an insulating annular disc having low conductivity interposed between said peg and said extension, the cross-section of said extension being smaller than said blind bore at room temperature, and a central pin interconnecting said peg and said extension.

4,609,355

DENTAL PROSTHESIS AND METHOD

Arthur E. Harvey, Sr., Davis Ave., R.D. #2, Pawcatuck, Conn. 06379, and Thomas J. Harvey, 64 Floral Park Blvd., Pawtucket, R.I. 02861

Filed Jul. 2, 1985, Ser. No. 751,371
Int. Cl.[4] A61C *13/22*
U.S. Cl. 433—181 11 Claims



1. A dental prosthesis comprising:

a. a substructure comprising;

i. a body portion dimensioned to be received between two spaced teeth in the mouth of a patient, said body portion having an open laterally extending channel formed therein which is open at one end thereof along one side edge of said body portion;

ii. a slide member received in said channel so that it is longitudinally slidable therein;

iii. first lug means on an end of said slide member and receivable in a notch in the inwardly facing side edge of one of said teeth;

iv. said slide member being dimensioned and being positioned in said channel so that said first lug means projects outwardly from said one side edge of said body portion, and so that a void area is defined in said channel adjacent the end of said slide member opposite from said first lug means;

v. second lug means projecting outwardly from the other side edge of said body portion and receivable in a notch in the inwardly facing side edge of the other of said teeth; and

vi. means biasing said first and second lug means apart;

b. a hardening dental composite material receivable in said void area for permanently securing said slide member with respect to said body portion and said first and second lug means with respect to each other; and

c. cap means receivable on said substructure and said composite material for defining an outer configuration of said prosthesis which simulates a natural tooth.

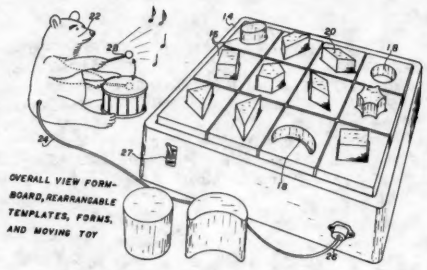
4,609,356

REARRANGEABLE FORM BOARD WITH SENSORY FEEDBACK

Deborah B. Gilden, 225 Vista Del Mar, San Rafael, Calif. 94901, and John E. Marciszewski, 1102 Knollwood Dr., Middletown, N.J. 07748

Filed Mar. 20, 1985, Ser. No. 714,251
Int. Cl.[4] G09B *19/00*
U.S. Cl. 434—259 20 Claims

1. An educational toy comprising a tray, a plurality of templates which can be positioned on said tray in a variety of different positions, each template having a hole therethrough which has a unique plan shape, a corresponding plurality of male form blocks, each having a shape which matches the hole in a respective template, and indicating means for providing a



sensible indication when a template is positioned on said tray and a mating form block is inserted into said template.

4,609,357

PHONETIC LANGUAGE TRANSLATION METHOD

Gwendolyn M. Clegg, Rte. 2, Box 378X, Harriman, Tenn. 37748

Filed Aug. 1, 1983, Ser. No. 519,398
Int. Cl.[4] G09B *19/04*
U.S. Cl. 434—167 7 Claims

1. A phonetic language translation method for translating a word of any one of various languages into a graphically expressed phonetically correct sounded translation of said word, said method comprising the steps of:

eliminating all silent alphabetic characters, or groups of alphabetic characters, from said word;

representing all said alphabetic characters, or combinations of said characters, of said word which phonetically express the traditional speech sound of a single said alphabetic character with said single alphabetic character;

representing all said alphabetic characters, or combinations of said characters, of said word which phonetically express the alphabetic characters name of a single said alphabetic character with said single alphabetic character and a first coding symbol placed proximate said single alphabetic character; and

representing all said alphabetic characters and combinations of said characters of said word which phonetically express a sound other than said traditional speech sound of said single alphabetic character, or said alphabetic character name of said single alphabetic character, with a preselected coded translation character representative of each said other sound.

4,609,358

VIDEO TRAINING SYSTEM FOR SIMULATANEOUSLY TRAINING A PLURALITY OF STUDENTS

Bruce F. Sangster, 6120 Marina Pacific South, Long Beach, Calif. 90803

Continuation-in-part of Ser. No. 277,808, Jun. 26, 1981, abandoned. This application Jan. 27, 1984, Ser. No. 574,672
Int. Cl.[4] G09B *7/04*
U.S. Cl. 434—307 5 Claims

1. A video training system for simultaneous interactive use by a plurality of students, said system using video sequences recorded on videodisc, said sequences reflective of response evocative information indicative of the results of possible evoked responses, said system comprising:

a plurality of student stations, each station for use by a student and comprising a television monitor for application thereto of said recorded video sequences and a corresponding microcomputer operable by said student to generate a microcomputer output signal in response to response evocative information displayed on said televi-

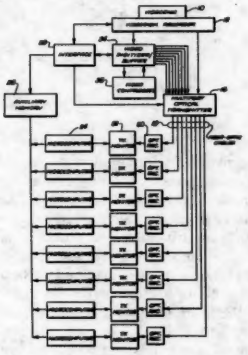
sion monitor, said microcomputer output signal corresponding to recorded video sequence indicative of the results of one of the possible evoked responses:

a videodisc player coupled to said plurality of student stations for applying to said television monitors video sequences recorded on a single videodisc played by said player;

a multiport transmitter means connected to said television monitors and said video player for applying recorded video sequences played by said player to said television monitors, said means controllable to apply selected recorded video sequences to selected television monitors; and

a control system coupled to said multiport transmitter means and to said videodisc player for controlling the application of video sequences to said television monitors, said control system responsive to said microcomputers and said microcomputer output signals so that video sequences reflective of information indicative of the results of evoked responses are applied to the television monitors corresponding to the microcomputers which have been operated by said students to generate the corresponding microcomputer output signals shortly after such microcomputer output signals have been generated, said control system comprising:

a video digitizer connected to said videodisc player for converting video sequences recorded on said videodisc and played by said videodisc player into digitized video signals;



a video compressor coupled to said digitizer for compressing said digitized video signals;

a computer memory coupled to said video compressor for storing compressed digitized video signals;

digital to analog converting means coupled to said memory and to said multiport transmitter means for converting digitized video signals stored in said memory into analog video signals for application through said multiport transmitter means to said television monitors; and

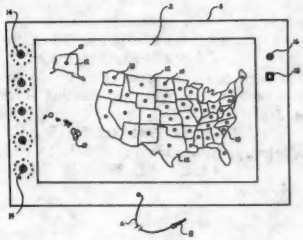
wherein said control system causes said videodisc player to play sequences indicative of the results of possible evoked responses into said video digitizer for conversion into digitized video signals, to compress those signals in said video compressor, to store those signals in said computer memory, and thereafter to apply those stored, compressed, digitized signals through said digital to analog converting means through said multiport transmitter means to said television monitors corresponding to the microcomputers which have been operated by said students to generate the corresponding microcomputer output signals, any of said stored compressed digitized video signals being so applicable to any of said television monitors whereby different signals are simultaneously applied to different television monitors when said students simultaneously operate said microcomputers to generate different microcomputer output signals.

4,609,359

EDUCATIONAL GAME

Alan N. Erickson, P.O. Box 503, Cardiff by the Sea, Calif. 92007, and Steve E. Erickson, 5683 Easton Ave., San Diego, Calif. 92120

Filed Sep. 13, 1985, Ser. No. 776,127
Int. Cl.[4] G09B *7/10*
U.S. Cl. 434—338 **15 Claims**



1. An educational game comprising:

(a) a selecting electrode,

(b) an energizing means,

(c) a plurality of selectable electrodes adapted to be individually contacted by the selecting electrode under control of a player, each selectable electrode being associated with only one item of significance on a map,

(d) an indicator means adapted to be energized whenever the selecting electrode contacts a selectable electrode which is in an energizing circuit,

(e) a multiple setting switching means adapted to bring the plurality of selectable electrodes individually into the energizing circuit, and

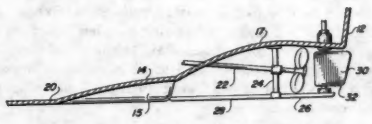
(f) a set of playing card, each card bearing indicia indicating a setting for the switching means which brings a selectable electrode into the energizing circuit, and further indicating a name of the associated with said selectable electrode.

4,609,360

BOAT HULL WITH FLOW CHAMBER

Robert M. Whitehead, P.O. Box 584, Anna Maria, Fla. 33501

Filed Jul. 12, 1984, Ser. No. 630,300
Int. Cl.[4] B63H *5/16*
U.S. Cl. 440—69 **6 Claims**



1. A boat hull having a V bottom and a keel line comprising:

a forward flow chamber defined by a first surface beginning approximately amidships of said hull and extending above the keel line thereof starting as a V-shape lying essentially transverse to the keel line, said first surface connected to said bottom by a pair of planar sides fairing slightly outboard from a vertical plane, said forward flow chamber gradually increasing in cross-sectional area as extended aft and the angle of said V-shape increasing such that the angle of said surface at the aft end of said forward flow chamber is approximately 180°;

a keelson disposed and aligned longitudinally with said keel line in said forward flow chamber; and

an aft flow chamber defined by a second surface beginning at said aft end of said forward flow chamber and curving upward as an inverted V-shape, said second surface connected to said bottom by aft extensions of said pair of planar sides, said second surface curving downward slightly at the stern of said hull;

whereby said forward flow chamber delivers water to said aft flow chamber smoothly with minimum turbulence and water issues from said aft flow chamber with minimum cavitation and turbulence.

4,609,361

FISH LINE AND WEED CUTTER FOR MARINE PROPELLER

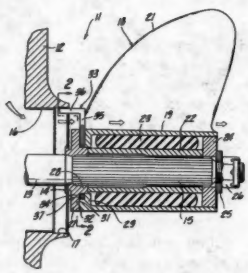
Yoshitsugu Sumino, Hamana, and Hiroichi Mizuno, Hamamatsu, both of Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Japan

Filed Feb. 14, 1984, Ser. No. 580,150

Claims priority, application Japan, Feb. 15, 1983, 58-22132

Int. Cl.[4] B63H *1/28*

U.S. Cl. 440—73 **10 Claims**



1. A fish line and weed cutter for a marine propulsion device having a lower unit, a drive shaft journalled by said lower unit, said lower unit defining an annular cavity surrounding said drive shaft, a propeller having a hub and at least one blade extending therefrom, and means including a thrust member for non-rotatably affixing said propeller to said drive shaft, the improvement comprising said propeller and said thrust member having facing surfaces in abutting engagement for transferring thrust forces from said propeller to said thrust member, said surfaces defining at least one localized recess where said thrust member is not engaged by said propeller, and a fish line and weed cutting member supported in said recess and having a portion extending in proximity to said lower unit annular cavity for cutting fish lines and weeds or the like, said recess and said fish line and weed cutting member being configured so as to non-rotatably connect said fish line and weed cutting member to said propeller and so as to maintain the abutting engagement between said facing surfaces of said propeller and said thrust member.

4,609,362

NON-SONIFEROUS POWER DRIVE FOR UNDERWATER VEHICLES

Michael DeMarco, Middletown, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 5, 1983, Ser. No. 510,539

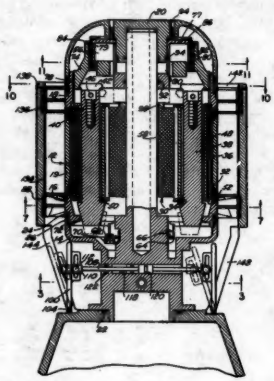
Int. Cl.[4] F42B *19/01*

U.S. Cl. 440—75 **3 Claims**

1. A gearless variable speed transmission comprising:

driving means adapted to be rotated around a common axis at a rotational velocity, said driving means for driving at said rotational velocity;

a plurality of satellites with each of said plurality of satellites arranged in contact with said driving means, each of said plurality of satellites including a shaft with a first contact area at one end and a second contact area at the other end, both said first and said second contact areas having surfaces with variable distances from the shaft axis, each of said plurality of satellites adapted to be rotated on its own axis by the combination of said driving means and friction contact at said first and second contact areas, and each of said plurality of satellites adapted to be rotated around the same segment of said common axis by said driving means at said driving means rotational velocity;



a first impeller abutting said first contact area of each of said plurality of satellites, said first impeller having means for being friction driven by said plurality of satellites;

a second impeller abutting said second contact area of each of said plurality of satellites, said second impeller having means for being friction driven by said plurality of satellites at the same speed but opposite direction as said first impeller; and

speed control means adapted to abut said plurality of satellites for controlling the speed of said first and said second impellers.

4,609,363

TRACK TOY

Yoshio Udagawa, 3-13, 3-chome, Mama Ichikawa-shi, Chiba-ken, Japan

Filed Apr. 1, 1985, Ser. No. 718,356

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1985, 8503618[U]

Int. Cl.[4] A63H *18/00*

U.S. Cl. 446—444 **8 Claims**

1. A track toy set comprising:

a track member **(20)** having an upper end and a lower end;

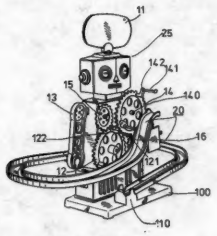
a body **(25)** mounted with respect to said track member **(20)**;

a first gear **(12)** rotatably mounted to said body **(25)** and located above said lower end of said track member **(20)**, having a plurality of first axially extending arms **(121)** peripherally disposed thereon and equally spaced from each other;

a second gear **(14)** rotatably mounted to said body **(25)** at a higher position relative to said first gear **(12)** and engaged with said first gear **(12)**, having a plurality of second axially extending arms **(141)** peripherally disposed thereon and equally spaced from each other;

a driving mechanism housed within said body **(25)** capable of driving said first gear **(12)** and said second gear **(14)** to

rotate, so that with the rotation of said first gear (12) and said second gear (14), said plurality of first axially extending arms (121) periodically levelling with said plurality of second axially extending arms (141) respectively; and



a wheeled toy member (30) including a pair of opposite supporting members (321,322) which member when placed on said lower end of said track member (20), is carried by one of said first axially extending arms (121) to one of said second axially extending arms (141), and then is carried to the upper end of said track member (20).

4,609,364

UNIVERSAL COUPLING BETWEEN A FIRST ROTARY SHAFT AND A SECOND ROTARY SHAFT

Roland Labbé, 32, allée des Passereaux, 44470 Sainte Luce sur Loire, France

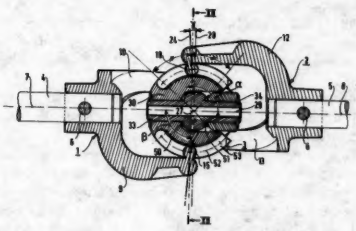
PCT No. PCT/FR84/00214, § 371 Date Jun. 4, 1985, § 102(e) Date Jun. 4, 1985, PCT Pub. No. WO85/01555, PCT Pub. Date Apr. 11, 1985

PCT Filed Sep. 28, 1984, Ser. No. 744,097

Claims priority, application France, Oct. 4, 1983, 83 15951

Int. Cl.[4] F16D *3/16, 3/50*

U.S. Cl. 464—112 13 Claims



1. A universal coupling between a first rotary shaft (7) and a second rotary shaft (8), the coupling being of the tripod joint type having a single bending point (27), and comprising:

a transmission unit (3) constituted by an assembly of three oscillating members (30, 31, 32) hinged about a common axis (29);

a first drive tulip (1) fixed to the end of the first shaft; and

a second drive tulip (2) fixed to the end of the second shaft;

each drive tulip being fitted with three drive members (15 to 20) each having an axis of symmetry (21 to 26) which is fixed relative to its drive tulip, the axes of symmetry of the six drive members meeting on the said common axis (29) of the three oscillating members, the axes of symmetry (21 to 23) of the drive members of the first tulip making an angle β with the axis (7) of the first shaft, and the axes of symmetry (24 to 26) of the drive members of the second tulip making an angle α with the axis (8) of the second shaft, the projections of the said axes of symmetry of the drive members of each tulip on a plane perpendicular to the axis of the shaft connected to that tulip forming the vertices of a substantially equilateral triangle, each of the three oscillating members including guide means (53, 54, 55, 75) co-operating with a pair of drive members, one of which belongs to the first tulip and the other of which belongs to the second tulip, in such a manner as firstly to prevent a tulip from becoming detached from the said transmission unit, and secondly to enable each drive member to move relative to the oscillating member with which it is co-operating over a portion of a circular path whose median plane contains the said common axis and the said axis of symmetry of the said drive member under consideration and whose center (27) is located at the said point at which the drive member axes of symmetry meet;

the coupling being characterized in that, for each of said oscillating members, the said guide means over a portion of a circular path of the drive members exist, at least to a certain extent, on each side of the common hinge axis (29),

in that each pair of drive members co-operating with the corresponding oscillating member is situated in such a manner that the two drive members of the pair are situated on each side of the said common hinge axis,

in that each tulip includes three drive arms (9 to 14) enabling the two tulips to interpenetrate without interference during rotation of the shafts even when the axes of the shafts are at an angle, said drive members being placed close to the end of each arm, and

in that the said angles α and β are supplementary angles.

4,609,365

DRIVE APPARATUS CONTAINING A UNIVERSAL LINK CHAIN

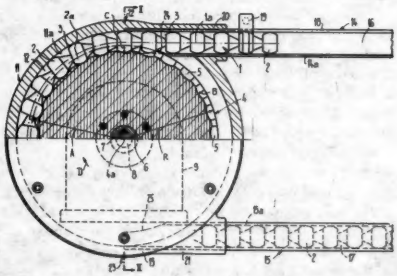
Jürg Eberle, Hinwil, Switzerland, assignor to Feramatic AG, Hinwil, Switzerland

Filed Oct. 4, 1982, Ser. No. 432,768

Claims priority, application Switzerland, Oct. 16, 1981, 6620/81

Int. Cl.[4] F16H *7/06*

U.S. Cl. 474—154 20 Claims



1. A drive apparatus comprising:

a universal link chain composed of interconnected chain links;

at least one chain wheel for driving said universal link chain;

said chain wheel having a circumferential profile engaging with the chain links of said universal link chain;

said circumferential profile of said chain wheel being substantially complementary to the profile of said universal link chain;

at least one guide channel having an internal space;

said chain links being guided at their circumference in said guide channel;

said guide channel extending in tangential direction up to the region of the circumference of said chain wheel;

said guide channel having wall means provided with at least one recess through which the chain wheel enters the internal space of said guide channel, in order to form

together with said guide channel a transfer location at which each chain link is simultaneously guided by the guide channel and the chain wheel; and

said chain links being guided at the transfer location by means of the guide channel over a circumferential portion possessing a sector angle which is greater than 180°.

4,609,366

APPARATUS FOR THE MANUFACTURE OF PLASTIC BAGS BY WAVE-LIKE INCISION TO DEFINE HANDGRIPS

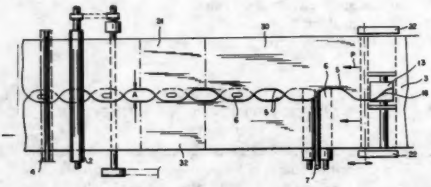
Willy Ley, Troisdorf-Spich, and Günter Stasiak, Niederkassel-Rheidt, both of Fed. Rep. of Germany, assignors to Lemo M. Lehmacher & Sohn GmbH Maschinenfabrik, Niederkasel-Mondorf, Fed. Rep. of Germany

Filed Oct. 5, 1984, Ser. No. 658,132

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1983, 3336145

Int. Cl.⁴ B31B *1/18, 1/86, 19/02*

U.S. Cl. 493—22 **2 Claims**



1. In an apparatus for making plastic bags in which a flattened tubular web is displaced past an incising station in which a wave-like incision subdivides said web longitudinally into two sections and said sections are then offset from one another to allow the alignment of handgrip portions defined by said incision before said sections are welded to form a succession of bags, the improvement which comprises in combination:

feeding means advancing said web in a longitudinal path horizontally past said station;

a grooved guide disposed beneath said web path at said station and formed with a groove having a width transversely of said web path at least equal to an amplitude of the wave-like pattern of said incision;

a knife carriage displaceable transversely of aid web path above said web path and having means comprising a knife extending downwardly toward said grooved guide for forming said incision when said blade extends into the groove of said grooved guide and said web is advanced past said station and said knife;

a bar extending transversely of said web path and carrying said carriage slidably along said bar;

a roller mounted above said bar and formed with an endless means engaging said carriage for shifting same back and forth along said bar with rotation of said roller;

roller drive means operatively connected with said roller for continuously rotating said roller to displace said carriage continuously even upon interruption of the advance of said web past said station;

feed drive means connected to said feeding means for operating said feeding means such that the web advance can be interrupted from time-to-time; and

means supporting said grooved guide for lowering same upon interruption of the advance of said web to withdraw said knife from said groove of said grooved guide, and for raising said grooved guide to enable said knife to project into the groove of said grooved guide upon restoration of advance of said web.

4,609,367

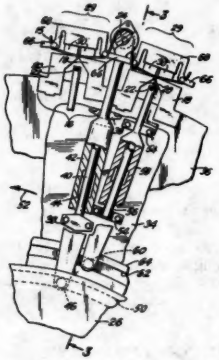
BAG MAKING MACHINE AND METHOD

Peter P. Savich, Longmeadow, Mass., and Paul Ziegelhoffer, Greenbay, Wis., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 28, 1984, Ser. No. 675,561

Int. Cl.⁴ B31B *23/10, 23/16, 23/64*

U.S. Cl. 493—194 **10 Claims**



1. Apparatus for making bags from a folded web of thermoplastic material comprising:

(a) a frame;

(b) a rotatable drum mounted to said frame for rotation about a longitudinal axis, said drum having an outer periphery adapted to receive a web of thermoplastic material;

(c) clamp means spaced from and extending about at least a portion of said drum outer periphery for contacting the web at spaced intervals and pressing it towards said drum outer periphery;

(d) support means carried by said drum and mounted thereto for movement along a radial path of travel relative to said drum, said support means having a first end and a second end;

(e) cam means fixed on said frame and contacting said support means first end for moving said support means along said path of travel as said drum rotates;

(f) tucker rolls attached to said support means second end and disposed at locations between said spaced intervals, said tucker rolls being guided by said support means for movement along a radial path from and between a position adjacent said drum periphery and an outwardly extending position spaced from and beyond said drum periphery, thereby contacting said tucker rolls against a surface of the web which faces said drum periphery and tucking the web outwardly from said drum periphery; and

(g) hot wire means carried by said drum and operable to sever and seal the web at said spaced intervals.

4,609,368

PNEUMATIC ULTRASONIC SURGICAL HANDPIECE

Robert S. Dotson, Jr., 119 Amanda Dr., Oak Ridge, Tenn. 37830

Filed Aug. 22, 1984, Ser. No. 643,252

Int. Cl.⁴ A61B *17/20*

U.S. Cl. 604—22 **12 Claims**

11. A pneumatically operated handpiece system for ophthalmic surgery, which comprises:

a cylindrical body having a first end portion, a middle portion and a second end portion, said body defining an axial first bore within said first end portion, an axial middle bore within said middle portion, and a second axial bore within said second end portion, said bores having interconnec-

tions, said body further provided with a first body passageway extending from a first end at said first end portion of said body to a second end at said second end portion of said body, and with a second passageway having a first end communicating with said first bore and a second end at said second end portion of said body;

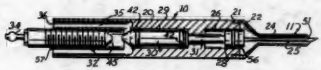
a probe member being provided with a first end and an enlarged end, and defining a central axial passageway therethrough communicating with said first bore and said first body passageway, said enlarged end of said probe member being threadably received by said first end portion of said body and defining an interior volume communicating with said first end of said first body passageway;

a tool driving member reciprocatably positioned within said first bore of said body, said tool driving member provided with an axial passageway;

a tool reciprocally positioned within said axial passageway in said probe member, said tool having a first end threadably attached to said tool driving member and a second end defining a needle extending from said first end of said probe member, said tool provided with an axial lumen communicating with said passageway in said tool driving member;

a cylindrical cup carrying member reciprocally positioned within said middle bore of said body, said cup carrying member provided with a centrally disposed cup recess in an end toward said second bore;

a stem connecting said cup carrying member with said tool driving means, said stem passing through said interconnection between said first bore and said middle bore and provided with an axial passageway communicating with said axial passageway of said tool driving member and with said first bore, said stem transmitting movement of



said cup carrying member to said tool driving member and to said tool;

a centrally disposed sleeve within said second bore of said body and spaced from the inner wall of said second bore by web means thereby defining gas discharge passageways external to said sleeve, said sleeve provided with internal threads;

a nozzle member mounted within said sleeve and having external threads cooperating with said threads of said sleeve to provide for axial adjustment of said nozzle member, said nozzle member having an axial passageway terminating at a first end toward said cup carrying member in a constricted orifice axially aligned with said cup, and at a second end with means for connecting said passageway of said nozzle member with a source of pressurized gas, said orifice being of a size to produce ultrasonic vibrations upon passage of gas from said source of pressurized gas, said orifice and said cup being of a selected size and spaced a selected distance to form an ultrasonic whistle whereby flow of said gas from said source of pressurized fluid establishes ultrasonic frequencies in said whistle thereby reciprocating said tool at ultrasonic frequencies;

a source of vacuum;

a source of liquid; and

control means for selectively connecting said source of vacuum to said second end of said first body passageway for aspiration through said first bore, said passageway in said stem and in said tool driving member and said lumen of said tool, said control means also for selectively connecting said source of liquid to said second end of said second body passageway for irrigation through said volume within said probe member exterior to said tool, and said control means also for selectively connecting said source of pressurized gas to said second end of said passageway of said nozzle member for ultrasonic reciprocation of said tool.

4,609,369

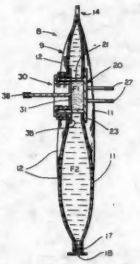
INTRAVENOUS SOLUTION ADMINISTRATION APPARATUS AND METHOD

Dean M. Ball, Gainesville, Ga., assignor to John Fontana, Beaufort, S.C. and Don Fontana, Bethesda, Md.

Filed Feb. 8, 1985, Ser. No. 699,569

Int. Cl.[4] A61M *31/00, 37/00*

U.S. Cl. 604—56 **9 Claims**



4. Intravenous solution administration apparatus comprising a container having a first flexible plastic wall formed with a first opening and a second flexible plastic wall located opposite said first wall formed with a second opening located opposite said first opening; a relatively rigid cup mounted to said first wall sealing closed said first opening and having an open cup end located within said container; a relatively rigid cup cap mounted to said second wall sealing closed said second opening; whereby two intravenous solution constituents may be stored in mutual isolation within said container with the cup open end closed by the cap and the two stored constituents later mixed together with the cap removed from the cup open end.

7. A method of administering an intravenous solution comprising the steps of:

(1) housing a first fluid within a cup mounted to one flexible wall of a container with an open end of the cup located within the container;

(2) releasibly sealing closed the cup open end with a cup cap mounted to another flexible wall of the container;

(3) housing a second fluid within the container about the sealed cup;

(4) pulling the cap off of the cup thereby establishing fluid communication between the cup interior and the container interior;

(5) mixing the first and second fluids; and

(6) withdrawing the mixed fluids from the container.

4,609,370

SURGICAL NEEDLE ASSEMBLY AND APPARATUS FOR ATTACHMENT ON A SURGICAL NEEDLE ASSEMBLY

Peter C. Morrison, 2919 Hillsdale Dr., Visalia, Calif. 93291

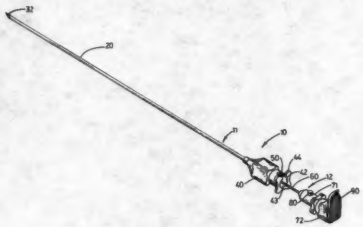
Continuation-in-part of Ser. No. 505,949, Jun. 20, 1983, abandoned. This application Aug. 30, 1984, Ser. No. 645,697

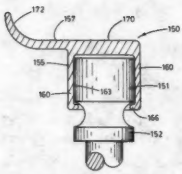
Int. Cl.[4] A61M *5/00*

U.S. Cl. 604—165 **5 Claims**

1. A needle assembly comprising a first needle having an elongated hollow shaft having a longitudinal axis and providing a first end having a tip with a surface disposed in predetermined angular relation to the longitudinal axis, and an opposite, second end mounting a hub having a cavity therein; a second needle having an elongated shaft having a longitudinal axis and mounting a head portion of predetermined dimen-

sions, the shaft being dimensioned for insertion within the first needle whereby, when so inserted, the longitudinal axis of the first needle and the second needle are disposed in substantially coaxial relationship and the needle assembly can be manipulated as a unit upon the application of mainpulative force thereto; a cap member dimensioned for removable mounting on said head portion in predetermined relation to the longiudinal axis of the second needle; and a guide mounted on the cap





membe extending laterally therefrom in predetermined angular relation thereto for indicating the attitude of disposition of the tip of the first needle, whereby the guide is disposed in known relation to the longitudinal axis of the second needle when the cap member is deployed on the head portion thereof, said guide having a curved portion dimensioned to be engaged by a finger of a user thereof for application of manipulative force to the needle assembly.

4,609,371

DUAL SYRINGE FOR EITHER SIMULTANEOUS OR SEQUENTIAL INJECTION OF LIQUIDS

Joanne L. Pizzino, 1426 Sugar Knoll Dr., Akron, Ohio 44313

Continuation-in-part of Ser. No. 747,935, Jun. 24, 1985. This application Sep. 3, 1985, Ser. No. 772,060

Int. Cl.[4] A61M *5/08*

U.S. Cl. 604—191 **3 Claims**

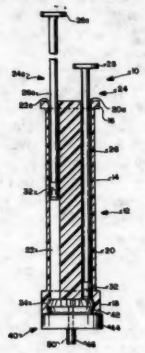
1. A syringe for injecting two liquids into a patient, and said syringe comprising:

a body having two barrels in said body, each of said barrels being adapted to contain an injectable liquid;

a plunger in each barrel for injection of said liquid;

an outlet passage for receiving said liquids; and

a manually operable valve in said body for controlling the dispensing of the respective liquids from said barrels, said valve being selectively movable by the user so that either of said barrels may be placed in communication with said outlet passage while the other barrel is closed, or both barrels are simultaneously in communication with said outlet passage, said valve being movable between first, second and third positions in which one of said barrels, the



other barrel, and both barels, respectively, are in communication with said outlet passage.

4,609,372

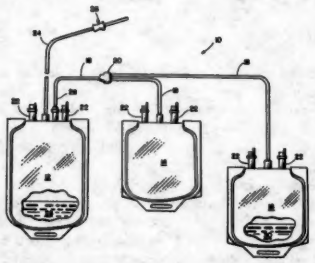
HEAT STERILIZABLE STORAGE SOLUTION FOR RED BLOOD CELLS

Raleigh A. Carmen, Concord; Chiyong Chong, San Francisco, and Barry Leng, Pleasant Hill, all of Calif., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Oct. 13, 1983, Ser. No. 541,813

Int. Cl.[4] A61B *13/16*

U.S. Cl. 604—262 **15 Claims**



1. A heat sterilized aqueous solution for storage of red blood cells comprising a stabilized ascorbate derivative, the solution having a pH greater than about 8.0 and sufficient to maintain substantially all of the initial amount of ascorbate derivative during heat sterilization of the composition.

4,609,373

SANITARY NAPKIN WITH ATTACHMENT MEANS

Russell L. Johnson, Waupaca County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 3, 1983, Ser. No. 538,611

Int. Cl.[4] A61F *13/16*

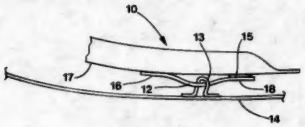
U.S. Cl. 604—389 **4 Claims**

3. A coupling for attaching a sanitary napkin to the crotch area of an undergarment comprising:

a first closed loop fastened to the crotch area of the undergarment; and

a loop coupling means for attaching the sanitary napkin to said closed loop, said loop coupling means comprising a strip defining first and second ends, wherein said first end is fastened to the sanitary napkin and said second end is

free to pass through said closed loop, and means for fastening said second end to the sanitary napkin to thereby



form a second closed loop coupling the sanitary napkin to the undergarment.

4,609,374

OSMOTIC DEVICE COMPRISING MEANS FOR GOVERNING INITIAL TIME OF AGENT RELEASE THEREFROM

Atul D. Ayer, Mt. View, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

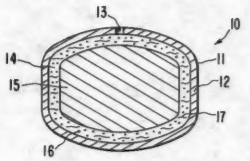
Filed Apr. 22, 1985, Ser. No. 725,961
Int. Cl.[4] A61K 9/22
U.S. Cl. 604—892 **8 Claims**

1. An osmotic dispensing device for delivering a beneficial medicine formulation to an environment of use, comprising:

(a) a wall formed in at least a part of a semipermeable composition permeable to the passage of an exterior fluid present in the environment of use and substantially impermeable to the passage of the beneficial medicine formulation, the wall surrounding and forming;

(b) a compartment;

(c) means in the compartment for carrying a beneficial medicine formulation, said means formed of a nontoxic, physiologically and pharmacologically inert means-forming material selected from the group consisting essentially of a



cellulose ester, cellulose ether, cellulose ester-ether, cellulose acylate, cellulose diacylate, cellulose triacylate, cellulose acetate, cellulose diacetate and cellulose triacetate;

(d) a dosage unit amount of a medicine formulation carried on the means; and,

(e) a passageway in the wall communicating with the compartment for delivering the beneficial medicine formulation from the osmotic device.

4,609,375

WATERLESS DIP DYE COMPOSITION AND METHOD OF USE THEREOF FOR TEXTILE-RELATED MATERIALS

Robert B. Wilson, Greenville, S.C.; William F. Pomeroy, Rocky Mount, N.C., and Louis T. Sovey, Jr., Spartanburg, S.C., assignors to Crucible Chemical Company, Greenville, S.C.

Continuation-in-part of Ser. No. 574,952, Jan. 30, 1984, abandoned, which is a continuation-in-part of Ser. No. 440,611, Nov. 10, 1982, abandoned. This application Nov. 8, 1984, Ser. No. 669,353

Int. Cl.[4] D06P *5/00*

U.S. Cl. 8—506 28 Claims

1. A waterless dip dye composition for apparel- and textile-related articles, made from plastic comprising an aromatic ester of the formula $ArCOOR_2$, $ArCOO—R_1—OOCAr$ or $(ArCOO)_z—R_3$, wherein R_1 is alkylene of 2–8 carbon atoms or polyoxyalkylene of the formula $—C_rH_{2r}(OC_rH_{2r})_s$, in which r is 2 or 3 and s is 1 to 15; R_2 is substituted for unsubstituted alkyl or alkenyl of 8–30 carbon atoms; R_3 is the residue of a polyhydric alcohol having z hydroxyl groups; Ar is substituted or unsubstituted mono- or bicyclic aryl of up to 15 carbon atoms and z is 3–6, admixed with at least about 0.5% by weight of a dyeing assistant agent and an organic colorant.

4,609,376

ANTI-WEAR ADDITIVES IN ALKANOL FUELS

Raymond C. Craig, Wantage, England; Jerome Panzer, Millburn, N.J.; Max J. Wisotsky, Highland Park, N.J., and Morton Beltzer, Westfield, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Mar. 29, 1985, Ser. No. 717,551

Int. Cl.[4] C10L *1/18*

U.S. Cl. 44—53 25 Claims

1. A fuel composition having improved wear reduction and lubricity properties and comprising a major amount of monohydroxy alkanol having from 1 to 5 carbon atoms and an effective wear reducing amount of an additive which is an ester of a monocarboxylic or polycarboxylic acid and a polyhydric alcohol, said acid having about 2 to about 3 carboxylic acid groups and about 24 to about 65 carbon atoms, said alcohol having about 2 to about 10 hydroxyl groups and about 2 to about 90 carbon atoms and said ester having at least two free hydroxyl groups.

4,609,377

AMINATED POLYISOPROPOXYLATED POLYETHOXYLATED ALKYLPHENOL AND ETHANOL/GASOLINE BLEND COMPOSITION CONTAINING SAME

Rodney L. Sung, Fishkill, N.Y., and Wheeler C. Crawford, Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 7, 1985, Ser. No. 784,299

Int. Cl.[4] C10L *1/22*

U.S. Cl. 44—56 11 Claims

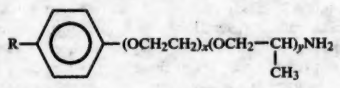
1. A fuel composition for internal combustion engines comprising

(a) a major portion of a fuel containing (i) ethanol and (ii) gasoline in amount of 0–50 volumes per volume of alcohol; and

(b) a minor wear-corrosion-inhibiting amount of, as a wear-corrosion-inhibiting additive,

nonionic surfactant of an aminated polyisopropoxylated polyethoxylated alkylphenol

(I)



wherein R is a (C_5–C_{30}) alkyl, alkaryl, aralkyl, aryl, or cycloalkyl group, x is a numeral of about 5 to about 30, and y is a numeral of about 1 to about 20.

4,609,378

MODIFIED SUCCINIMIDES (VIII)

Robert H. Wollenberg, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 12, 1985, Ser. No. 722,908

Int. Cl.[4] C10L *1/24*

U.S. Cl. 44—57 6 Claims

1. A product produced by the process which comprises contacting at a temperature sufficient to cause reaction a polyamino alkenyl or alkyl succinimide and a compound of the Formula I,

wherein R_4 is an alkalene group of from 2 to 3 carbon atoms or an alkylene group of from 2 to 3 carbon atoms substituted with from 1 to 3 alkyl groups of from 2 to 3 carbon atoms each.

4,609,379

FUEL ADDITIVE

George H. Kitchen, III, 646 Lakeview Cir., Rio Rancho, N. Mex. 87124

Filed Jun. 15, 1984, Ser. No. 621,073

Int. Cl.[4] C10L *1/22*

U.S. Cl. 44—63 2 Claims

1. A fuel additive for stored fuel capable of reducing the amount of macroscopic sludge particles formed from polymerization reactions promoted by bacteria and oxidation, where more than about 50 parts by weight of the additive comprises an amine selected from the group consisting of polymerization products of ethylene diamine, polymerization products of analogs and homologs of ethylene diamine, and mixtures thereof, about 25 parts by weight of an aromatic solvent selected from the group consisting of naphtha products having a boiling range of from about 420° F. (216° C.) to about 545° F. (285° C.), about 25 parts by weight of a poly alpha olefin synthetic oil and an effective amount of Hexahydro-1,3,5-Tris(2 Hydroxyethyl)S-Triazine biocide.

4,609,380

ABRASIVE WHEELS

Scott L. Barnett, Crystal, and Gary M. Fariss, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Feb. 11, 1985, Ser. No. 700,556

Int. Cl.[4] C09K *3/14*

U.S. Cl. 51—298 11 Claims

1. An abrasive wheel comprising:

(a) a matrix of organic material;

(b) abrasive granules dispersed throughout and adhered in said matrix; and

(c) a binder system adhering said abrasive granules in said matrix, said binder system comprising a blend of:

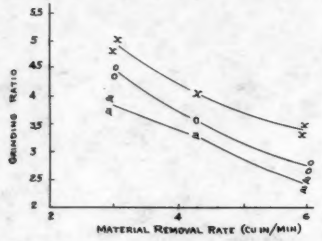
(1) binder having an initial liquid state and being curable to a tough adherent polyurethane material which in the unmodified state will firmly adhere said abrasive granules in said matrix of said wheel but, when said wheel is rotated against a workpiece under heat-generating conditions such as high wheel to workpiece pressure and surface speed, may smear onto the surface of the workpiece; and

(2) sufficient smear-reducing quantity of a smear-reducing compatible polymer having a glass transition of at least 50° C. to endow the blend with a glass transition of at least 40° C.

4,609,381
GRINDING AID

Kesh S. Narayanan, Holden, and Suresh S. Vagarali, Shrewsbury, both of Mass., assignors to Norton Company, Worcester, Mass.

Filed Dec. 13, 1984, Ser. No. 681,052
Int. Cl.[4] C09K *3/14*
U.S. Cl. 51—298 **15 Claims**



1. An abrasive article comprising abrasive grain and a bonding material, said bonding material being a thermoset binder resin and said article including a grinding aid filler, said filler consisting of a cofused near eutectic mix of an alkali metal sulphate and an alkali metal chloride, said mix being crushed prior to being included in said mix.

4,609,382
SOLIDS CONCENTRATE WHICH CONTAINS ABRASIVE SOLIDS AND CAUSES LITTLE WEAR

Hans-Gerhard Fritz, Uhingen; Helmut Schüle; Eberhard Grünschloss, both of Stuttgart; Tomas Riedel, Biberach, and Karl Maier, Augsburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 7, 1985, Ser. No. 699,006
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1984, 3404859
Int. Cl.[4] C09K *3/14*
U.S. Cl. 51—298 **8 Claims**

1. A solids concentrate for filling or coloring of polymers consisting essentially of 10 to 80% by weight of at least one abrasive solid, 20 to 90% by weight of a carrier material and 0 to 50% by weight of an additive required for processing and use, wherein the carrier material consists essentially of 0 to 99.5% by weight of at least one polymer which is compatible with the polymer which is to be provided with the solids concentrate and 0.5 to 100% by weight of at least one crystalline polyolefin wax having a molecular weight of about 1.000 to 20.000 and a melting point of about 120° to about 155° C. or an amide wax derived from aliphatic carboxylic acids with 16 to 22 carbon atoms and diamines with 2 to 6 carbon atoms whereby the carrier material has a resistance to shear or to deformation or both at least as high as that of the polymer to be provided with the solids concentrate.

4,609,383
APPARATUS AND METHOD FOR EXTRACTING OXYGEN FROM FLUIDS

Joseph Bonaventura; Celia Bonaventura, both of Beaufort, N.C.; Joseph C. Van Ryzin, Kailua, Hi., and Bruce D. Zenner, Beaufort, N.C., assignors to Aquanautics Corporation, San Francisco, Calif.

Filed Sep. 24, 1984, Ser. No. 653,549
Int. Cl.[4] B01D *53/22*
U.S. Cl. 55—16 **25 Claims**

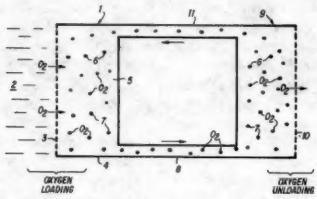
1. An apparatus for extracting oxygen from an environment in contact with said apparatus, which comprises:

a container having an inlet, an outlet, and an oxygen permeable membrane which together at least in part define an inner space of said container, said membrane having a first surface adapted to be in contact with said environment and a second surface facing said interior space;

a carrier fluid in contact with said second surface of said membrane in said container; and

a non-proteinaceous oxygen binding compound contained in said carrier fluid, wherein said compound comprises a tetradentate chelating molecule, a metal ion chelated in said molecule, and a nitrogenous base chelated to said metal ion.

17. A method for removing oxygen from a fluid environment, which comprises:



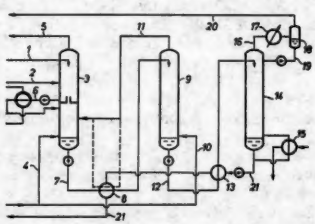
contacting said environment with a first surface of an oxygen permeable membrane having a first and a second surface which separates said environment from an interior space of a closed container, and

contacting said second surface of said membrane with a carrier fluid containing a non-proteinaceous oxygen binding compound which comprises a tetradentate molecule, a metal ion chelated by said molecule, and a nitrogenous base chelated to said metal ion, wherein said compound is not saturated with oxygen, thereby removing oxygen from said fluid environment and increasing oxygen concentration in said container.

4,609,384
MULTIPLE TEMPERATURE LEVEL REGENERATION OF CO_2 FROM PHYSICAL SOLVENT

Gerhard Ranke, Pocking, and Horst Weiss, Munich, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Dec. 4, 1984, Ser. No. 677,956
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1983, 3343916
Int. Cl.[4] B01D *53/14*
U.S. Cl. 55—40 **23 Claims**



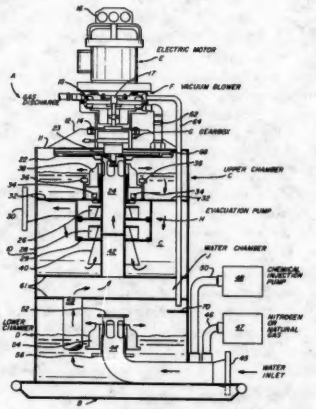
1. In a process for the regeneration of a physical solvent containing absorbed sour gases comprising CO_2 and H_2S, wherein the loaded solvent is treated with a stripping gas and/or expanded to desorb CO_2, and the resultant solvent is subjected to thermal regeneration to desorb H_2S, the improvement comprising conducting the CO_2 desorption at two or more different temperature levels in at least two serially connected steps, yielding at a lower temperature a solvent partially freed of CO_2 and then yielding at a higher temperature a solvent more extensively freed of CO_2, said higher temperature being lower than the resultant regenerated solvent withdrawn from the thermal regeneration zone.

4,609,385

MULTI STAGE WATER DEOXYGENATOR

Harry L. Burgess, Houston, Tex., assignor to Burgess & Associates Mfg., Inc., Houston, Tex.

Filed May 6, 1985, Ser. No. 731,071
Int. Cl.[4] B01D *19/00*
U.S. Cl. 55—193 9 Claims



1. A plural stage subatmospheric water deoxygenator for continuously scavenging oxygen from oxygen-contaminated feed water which comprises first stage vacuum chamber water deoxygenating means containing a body of initially deoxygenated water, at least one intermediate stage vacuum chamber water deoxygenating means containing a body of further deoxygenated water, final stage vacuum chamber water deoxygenating means containing a body of substantially deoxygenated water, liquid-liquid conduit means sequentially interconnecting said stages for conveying water from a stage to the next succeeding stage, and vacuum means interconnected with said stages for maintaining a progressive subatmospheric pressure differential therebetween, said first stage being under the least subatmospheric pressure and said final stage being under the greatest subatmospheric pressure;

said first stage vacuum chamber means including first stage scheduling means fluidly connectable with a pressured feed water source for simultaneously, continuously:

adjusting the rate of flow of feed water thereto in order to maintain a predetermined volume of said partially deoxygenated water in said first stage vacuum chamber,

fluidly sealing the interior of said first stage vacuum chamber from atmospheric pressure and feed water pressure; and

spraying a stream of feedwater into said first stage vacuum chamber to reduce the pressure thereon to the subatmospheric pressure of said first stage to partially deoxygenate said feed water;

each of said intermediate stage vacuum chamber means including upstanding intermediate chamber scheduling means for spraying said body of further deoxygenated water thereinto and for maintaining a body of water therein;

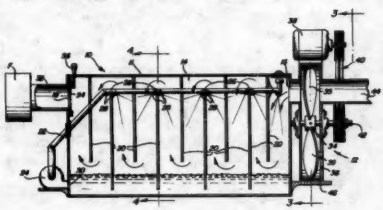
said final stage vacuum chamber means including means for continuously accelerating and centrifuging said further deoxygenated water under vacuum and for spraying said thus-accelerated and centrifuged water into said final stage vacuum chamber to thereby substantially completely remove the remainder of said gaseous oxygen therefrom and also including pump means for delivering deoxygenated water under pressure from said deoxygenator.

4,609,386

PULSATING FLOW SCRUBBER ATTACHMENT

John R. Sibley, P.O. Drawer 2048; James R. Masters, Rte. 1, Box 16-D, and Oliver C. Squires, 3310 Old Cavern Hwy., all of Carlsbad, N. Mex. 88220

Continuation of Ser. No. 574,623, Jan. 27, 1984, abandoned. This application Aug. 26, 1985, Ser. No. 769,753
Int. Cl.[4] B01D *47/12*
U.S. Cl. 55—223 9 Claims



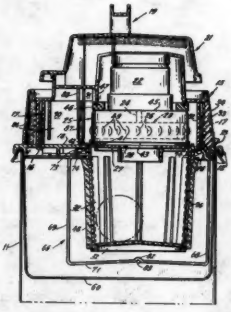
1. In a spray-type scrubber for removing pollutants from a gas, the scrubber comprising a scrubber chamber having a gas inlet and a gas outlet, liquid spray means within the chamber, and means for providing a flow of gas to be scrubbed through the chamber from the inlet to the outlet in a manner providing contact of the gas with sprayed liqud in the scrubber chamber so as to effect transfer of pollutants from the gas to the liquid, the improvement comprising means for applying pulsations to the gas flowing through the scrubber chamber, wherein the means for applying pulsations to the gas comprises a pulse generator associated with an inlet gas duct leading to the gas inlet of the scrubber chamber, wherein the inlet gas duct is of reduced cross-section relative to the cross-section of the scrubber chamber, and the pulse generator comprises a rotor having an axis externally of the duct spaced from the axis of the duct, and blades of larger diameter than the diameter of the duct adapted to cut across the flow of gas in the inlet duct to provide the pulsations therein.

4,609,387

COLLAPSIBLE SUPPORT CAGE FOR VACUUM CLEANER FILTER

Robert C. Berfield, Jersey Shore, and Robert L. Crevling, Williamsport, both of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.

Filed Dec. 28, 1984, Ser. No. 687,512
Int. Cl.[4] B01D *46/02*
U.S. Cl. 55—320 10 Claims



1. A vacuum cleaner including:

a tank having a top opening,

fan means for generating a flow of working air along a path that extends through said tank,

a lid removably secured to said tank and disposed over said top opening, said lid having an aperture located along said path and constituting an exit through which said working air is drawn from said tank,

a frame mounted on said lid, a first filter supported by said frame and disposed to have said working air flow therethrough,

a second filter disposed within said tank, a collapsible frame structure mounted on said lid and including a plurality of cooperating elements movable between erected and collapsed portions:

with said elements in their said erected positions, said frame structure being operatively positioned to prevent said working air from moving said second filter into contact with said first filter;

with said elements in their said collapsed position remaining mounted on said lid, said first filter being accessible for removal and replacement while said frame remains mounted on said lid; and

and detent means for releasably maintaining said cooperating elements in their erected positions.

4,609,388

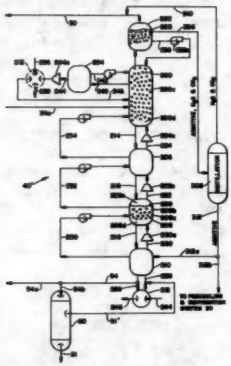
GAS SEPARATION PROCESS

Robert J. Adler, Shaker Heights; Coleman B. Brosilow, Cleveland Heights; William R. Brown, Brecksville, and Nelson C. Gardner, Cleveland Heights, all of Ohio, assignors to CNG Research Company, Pittsburgh, Pa.

Continuation of Ser. No. 196,124, Oct. 9, 1980, abandoned, which is a continuation-in-part of Ser. No. 31,318, Apr. 18, 1979, Pat. No. 4,270,937, which is a continuation-in-part of Ser. No. 746,622, Dec. 1, 1976, abandoned. This application May 24, 1985, Ser. No. 737,579

Int. Cl.[4] F25J *3/00*

U.S. Cl. 62—12 **44 Claims**



15. A process for the removal of sulfur-containing gas molecules from a feed gas stream, comprising precluding the need to distill the feed gas stream by the steps of:

(1) contacting the gas stream in countercurrent flow with a liquid carbon dioxide absorbent to absorb and entrain the sulfur-containing molecules;

(2) separating a substantially desulfurized residual gas stream from a mixture of the carbon dioxide absorbent and absorbed sulfur-containing molecules; and

(3) separating the carbon dioxide absorbent and concentrating the sulfur-containing molecules of said mixture by crystallization.

16. A process for treating a feed gas stream comprising relatively high boiling point gases including hydrogen sulfide, carbonyl sulfide, and carbon dioxide and relatively lower boiling point gas of primary value, comprising precluding the need to distill the feed gas stream by the steps of:

(a) providing a feed gas stream which is pressurized and cooled to a predetermined pressure and temperature;

(b) providing an absorption column and a supply of substantially pure liquid carbon dioxide absorbent at substantially said predetermined pressure and temperature;

(c) introducing absorbent from said supply thereof and said feed gas stream into said absorption column for separation of said hydrogen sulfide and carbonyl sulfide from said lower boiling point gas;

(d) contacting said feed gas stream in said absorption column with a countercurrent flow of absorbent in an amount sufficient, but not exceeding that required, to absorb and entrain substantially all of said hydrogen sulfide present in the gas stream and thereby also to absorb and entrain substantially all of said carbonyl sulfide in the gas stream while maintaining most of the absorbent in the liquid state at substantially said pressure and temperature, the balance of the absorbent being vaporized by the heat of condensation of the absorbed gas;

(e) withdrawing from said absorption column a substantially completely desulfurized residual gas stream containing said relatively lower boiling point gas and a mixture of the still liquid absorbent and gases absorbed or entrained therewith; and

(f) recovering substantially pure carbon dioxide from the separated liquid mixture of said absorbent and gases absorbed or entrained therewith.

4,609,389

PROCESS FOR SCRUBBING GASEOUS COMPONENTS OUT OF GASEOUS MIXTURES

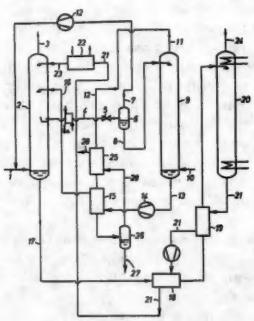
Heinz Karwat, Pullach, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Dec. 18, 1984, Ser. No. 683,096

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1983, 3346038

Int. Cl.[4] F25J *3/00*

U.S. Cl. 62—17 **8 Claims**



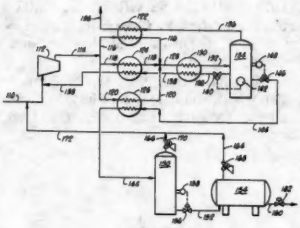
1. In a process for scrubbing gaseous components from gaseous mixtures comprising scrubbing the gaseous mixture with a physical solvent, regenerating resultant loaded solvent by a process comprising subjecting at least a fraction of the loaded solvent to non-thermal degasification to obtain a gaseous fraction and regenerated solvent, and recycling the regenerated solvent into the scrubbing step, the improvement which comprises cooling said discharged gaseous fraction in heat exchange with non-thermally degasified regenerated solvent at sufficiently low temperatures to condense out entrained solvent vapors from the gaseous fraction.

4,609,390

PROCESS AND APPARATUS FOR SEPARATING HYDROCARBON GAS INTO A RESIDUE GAS FRACTION AND A PRODUCT FRACTION

Richard A. Wilson, P.O. Box 5987, Norman, Okla. 73070

Filed May 14, 1984, Ser. No. 609,641
Int. Cl.[4] F25J 3/06
U.S. Cl. 62—21 8 Claims



1. A process for the separation of a feed gas containing methane, ethane and less volatile components into a volatile residue gas fraction containing a major portion of methane and a relatively less volatile product fraction containing a major portion of ethane and less volatile components, comprising:

forming a first stream containing methane, ethane and less volatile components;

compressing said first stream;

cooling said compressed first stream to a phase separating temperature and pressure;

phase separating said cooled first stream into a residue gas fraction containing a major portion of methane and a liquid fraction;

expanding a first portion of said liquid fraction through a Joule-Thompson valve to form an expansion-cooled second stream;

exchanging heat between said second stream and said first stream achieving at least a portion of said cooling said compressed first stream;

recycling at least a portion of said second stream into said first stream upstream of said compressing step;

removing a second portion of said liquid fraction as a relatively less volatile product fraction containing a major portion of ethane and less volatile components; and

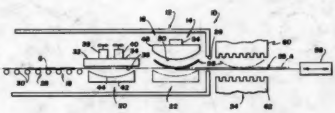
controlling flow through said Joule-Thompson valve responsive to the temperature of the residue gas fraction and product fraction as they are phase separated so as to regulate expansion-cooling to provide a desired composition of said residue gas and said product fraction.

4,609,391

METHOD FOR FORMING GLASS SHEETS

Harold A. McMaster, Woodville, Ohio, assignor to Glasstech, Inc., Perrysburg, Ohio

Division of Ser. No. 674,039, Nov. 23, 1984, Pat. No. 4,575,390.
This application Sep. 25, 1985, Ser. No. 779,873
Int. Cl.[4] C03B 23/03
U.S. Cl. 65—104 17 Claims



1. A method for forming a glass sheet heated to a sufficiently high temperature to be deformable, the method comprising:

engaging the heated glass sheet at a first position with a first curved mold to provide initial forming of the glass sheet;

moving the initially formed glass sheet horizontally on the first curved mold to a second position; and

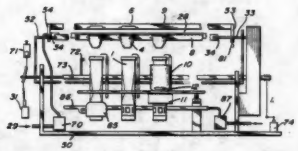
engaging the initially formed glass sheet at the second position with a second curved mold to further form the glass sheet.

4,609,392

SAMPLE PREPARATION MACHINE

Fernand Claisse, Sainte-Foy, Canada, assignor to Gestion Financiere Duberger Inc., Sainte Foy, Canada

Filed Mar. 5, 1985, Ser. No. 708,465
Claims priority, application Canada, Mar. 5, 1984, 448803
Int. Cl.[4] C03B 5/18
U.S. Cl. 65—134 33 Claims



1. An apparatus for melting and diffusing materials comprising:

a plurality of crucibles,

each said crucible being formed with at least one inner protrusion therein to form narrower passages in said crucible;

a rotatable crucible support and means for mounting said crucibles on said rotatable crucible support;

heating means for melting the content of said crucibles;

means to produce continuous deformation of the molten content of said crucible consecutive to contiuous movement of said molten content in and out of said narrower passages so as to produce substantially homogeneous diffusion of the materials in said crucibles; and

means associated with said rotatable support to pour the molten contents of diffused materials present in said crucibles, into fused material containers.

29. A method for melting and diffusing materials by heating said materials in a crucible until fusion, and stirring the resulting molten mixture, the improvement which comprises providing said crucible with at least one inner protrusion therein to form narrower passages in said crucible, and producing a continuous deformation of the molten content of said crucible consecutive to continuous movement of said molten content in and out of said narrower passages so as to produce substantially homogeneous diffusion of said materials in said crucible.

4,609,393

APPARATUS FOR THE PRODUCTION OF GLASS CONTAINERS OF THE BOTTLE AND FLASK TYPE HAVING A MEDIUM OR NARROW APERTURE, USING THE BLOW-BLOW OR PRESS-BLOW PROCESS

Pierre G. Boutier, Le Havre, France, assignor to Verreries de Graville, Le Havre (Seine-Maritime), France

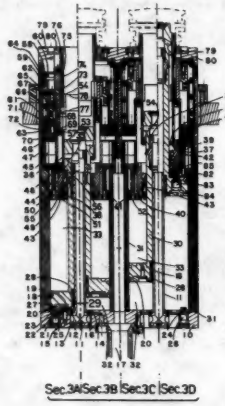
Filed Jan. 17, 1985, Ser. No. 692,272
Claims priority, application France, Jan. 18, 1984, 84 00759
Int. Cl.[4] C03B 9/36
U.S. Cl. 65—229 12 Claims

1. Apparatus for the production of bottle and flask type glass containers being adapted for use in equipment utilizing either the blow-blow or press-blow process, the equipment having blanking and finishing moulds including ring moulds and with single or multiple-paraison modular boxes, the punch control mechanisms being disposed beneath the blanking moulds, each apparatus having at least one double-acting main jack includ-

ing a piston and rod and a punch adapter at the terminal end of the rod, the piston of said main jack controlling the pressing movement of the punch, a cooling circuit having fluid which flows through the apparatus and punch, a drive fluid supply to operate the main jack, the apparatus comprising:

a two-part bushing having a top part and a bottom part, the top part being adapted to project from the apparatus to an exit position in which said top part enters into the ring mould and centers the ring mould, the bottom part being engageable with the top part;

a compression spring acting on the top part to being the top part into the exit position;



an auxiliary jack adapted for lifting the main jack by an adjustable length;

link means for operatively connecting the auxiliary jack to the piston of the main jack; and

a movable end (37) defining with the piston a first chamber of the main jack, the movable end having an operative section smaller than that of the piston, the movable end being fitted on the rod beneath the bottom part and being movable between a bottom position thereby allowing the withdrawal of the punch adapter and the top part to beneath the surface of the apparatus and a top position allowing the upward movement of the piston and of the punch to carry out the pressing stroke.

4,609,394

PHENYL BENZOTHIADIAZOLE ETHER HERBICIDES

Michael T. Clark, Sittingbourne; David Munro, Maidstone, and Ian J. Gilmore, Sittingbourne, all of England, assignors to Shell Oil Company, Houston, Tex.

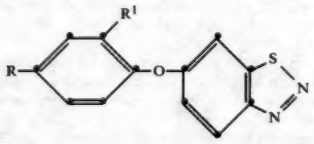
Filed Oct. 18, 1985, Ser. No. 789,296

Claims priority, application United Kingdom, Oct. 18, 1984, 8426367

Int. Cl.[4] **C07D** *285/06;* **A01N** *43/82*

U.S. Cl. 71—90 **6 Claims**

1. A compound of the formula:



wherein R is halogen or haloalkyl of one to six carbon atoms and R^1 is hydrogen, halogen, nitro, cyano or haloalkyl of one to six carbon atoms.

4,609,395

NOVEL BENZYLSULFONYLUREAS AND ARYLSULFAMOYLUREAS N-[(SUBSTITUTED PYRIMIDIN-2-YL)AMINOCARBONYL]-1-OXO-FUSED BENZYL-7-METHANESULFONAMIDES USEFUL AS HERBICIDES AND PLANT GROWTH REGULANTS

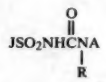
Robert J. Pasteris, and Mark E. Thompson, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 585,170, Mar. 1, 1984, abandoned. This application Dec. 26, 1984, Ser. No. 686,796

Int. Cl.[4] **A01N** *43/02;* **C07D** *405/02, 417/02*

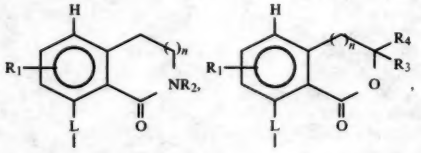
U.S. Cl. 71—90 **21 Claims**

1. A compound of the formula

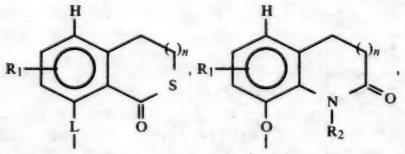


and agriculturally suitable salts thereof, wherein

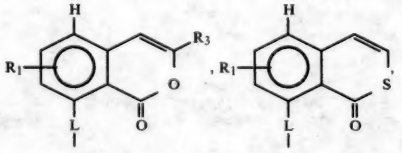
J is



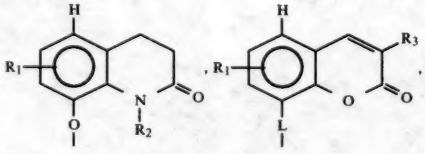
J_2 J_3



J_4 J_6

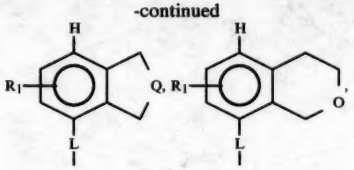


J_8 J_9

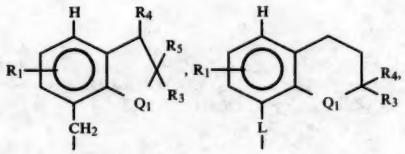


J_{11} J_{12}

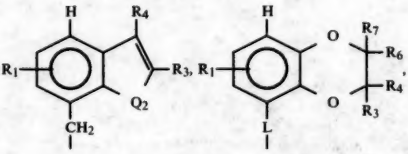
-continued



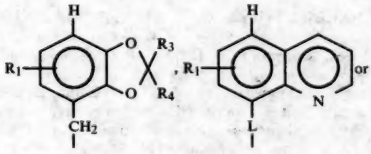
J_{13} J_{14}



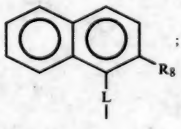
J_{15} J_{16}



J_{17} J_{18}

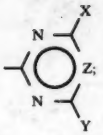


J_{19} J_{20}



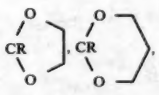
J_{21}

n is 0 or 1;
L is CH_2 or O;
Q is CH_2 or O;
Q_1 is O, S or SO_2;
Q_2 is O or S;
R is H or CH_3;
R_1 is H, F, Cl, Br, CH_3 or OCH_3;
R_2 is H or C_1–C_3 alkyl;
R_3 is H or CH_3;
R_4 is H or CH_3;
R_5 is H, CH_3 or C_2H_5;
R_6 is H or CH_3;
R_7 is H or CH_3;
R_8 is F, Cl, Br, OCH_3, SCH_3, SO_2CH_3, CO_2CH_3, $SO_2N(CH_3)_2$ or OSO_2CH_3;
A is



A-1

X is CH_3, OCH_3, Cl, Br, OCH_2CF_3 or OCF_2H;
Y is C_1–C_3 alkyl, CH_2F, cyclopropyl, C≡CH, OCH_3, OC_2H_5, CH_2OCH_3, NH_2, $NHCH_3$, $N(CH_3)_2$, OCH_2CH_2F, CF_3, SCH_3, $OCH_2CH{=}CH_2$, $OCH_2C{\equiv}CH$, $OCH_2CH_2OCH_3$, $CR(OCH_3)_2$,



$CR(OCH_2CH_3)_2$ or OCF_2H;
Z is CH;
provided that
when X is Cl or Br, then Y is OCH_3, OC_2H_5, $NHCH_3$, $N(CH_3)_2$ or OCF_2H.

15. A method for the control of undesirable vegetation comprising applying to the locus of such vegetation an herbicidally effective amount of a compound of claim **1**.

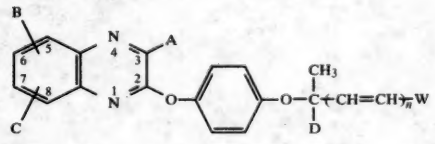
4,609,396

QUINOXALINYLOXY ETHERS AS SELECTIVE WEED CONTROL AGENTS

Maged M. Fawzi, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

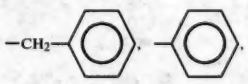
Filed Jun. 23, 1980, Ser. No. 161,940
Int. Cl.[4] **A01N** *43/60;* **C07D** *241/44, 401/12, 403/12*
U.S. Cl. 71—92 **9 Claims**

1. A compound of the formula:



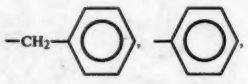
where
A is H or C_1–C_4 alkyl;
B is H, Cl, Br, F, CF_3, OCH_3 or NO_2;
C is H, CH_3, Cl, Br or F;
W is CN or

R is Cl, XR_1, NR_2R_3, OH or OM;
R_1 is C_1–C_4 alkyl,

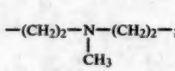


C_5–C_8 cycloalkyl, $—CH_2CH_2OCH_3$, $—CH_2CH_2OCH_2CH_3$ or $—CH_2CH_2CH_2OCH_3$, C_3–C_4 alkenyl, C_3–C_4 alkynyl or C_3–C_4 alkenyl or alkynyl optionally substituted with one Cl;

X is O or S;
M is an agriculturally suitable salt;
R_2 is H, C_1–C_4 alkyl, C_5–C_8 cycloalkyl



OCH_3, C_3–C_4 alkenyl, or $—CH_2CH_2NR_4R_5$ where R_4 and R_5 are independently methyl or ethyl;
R_3 is H or C_1–C_4 alkyl; or
R_2 and R_3 may be taken together to be $—(CH_2)_2—O—(CH_2)_2—$, $—(CH_2)_4—$, $—(CH_2)_5—$ or $—(CH_2)_6—$ or



n is 0 or 1;
D is H, or C_2R_1;
provided that:
(a) when n=1, then D=H; and
(b) R_2 and R_3 together contain no more than 6 carbon atoms
(c) when n is O, A is C_1–C_4 alkyl.

7. A composition for the control of undesirable vegetation consisting essentially of a herbicidally effective amount of a compound of any of claims 1–6 and at least one of (a) a surface active agent and (b) a solid or liquid diluent.

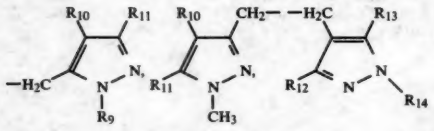
4,609,397
HERBICIDAL 3-[[(4,6-DIMETHOXYPYRIMIDINE-2-YL)AMINOCARBONYL]AMINOSULFONYLMETHYL]-1,5-DIMETHYL-1H-PYRAZOLE-4-CARBOXYLIC ACIDS, ETHYL ESTERS

Barry A. Wexler, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 581,817, Feb. 21, 1984, abandoned. This application Dec. 11, 1984, Ser. No. 679,145
Int. Cl.[4] A01N *43/48*; C07D *403/00, 239/00, 405/14*
U.S. Cl. 71—92 21 Claims

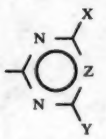
1. A compound of formula:

wherein J is

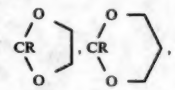


J-4 J-5 J-6

R is H or CH_3;
R_9 is H, C_1–C_3 alkyl or phenyl;
R_{10} is CO_2R_{15}, $C(O)NR_{16}R_{17}$, $SO_2NR_{16}R_{17}$, $SO_2N(OCH_3)CH_3$, SO_2R_{18} or NO_2;
R_{11} is H or CH_3;
R_{12} is H, CO_2R_{15}, $C(O)NR_{16}R_{17}$, $SO_2NR_{16}R_{17}$, $SO_2N(OCH_3)CH_3$, SO_2R_{18} or NO_2;
R_{13} is H, CO_2R_{15}, $C(O)NR_{16}R_{17}$, $SO_2NR_{16}R_{17}$, $SO_2N(OCH_3)CH_3$, SO_2R_{18} or NO_2;
R_{14} is H or CH_3;
R_{15} is C_1–C_2 alkyl;
R_{16} is H or C_1–C_2 alkyl;
R_{17} is H or C_1–C_2 alkyl;
R_{18} is C_1–C_2 alkyl;
A is



X is CH_3, OCH_3, Cl, Br, OCH_2CF_3 or $OCHF_2$;
Y is C_1–C_3 alkyl, CH_2F, cyclopropyl, C≡CH, OCH_3, OC_2H_5, CH_2OCH_3, NH_2, $NHCH_3$, $N(CH_3)_2$, OCH_2CH_2F, CF_3, SCH_3, $OCH_2CH=CH_2$, $OCH_2C≡CH$, $OCH_2CH_2OCH_3$, $CR(OCH_3)_2$,



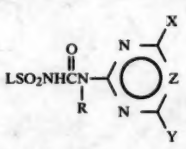
$CR(OCH_2CH_3)_2$ or OCF_2H;
Z is CH;
provided that
(1) when X is Cl or Br, then Y is OCH_3, OC_2H_5, $NHCH_3$, $N(CH_3)_2$ or OCF_2H;
(2) R_{12} and R_{13} are not simultaneously H; and
(3) when R_{12} is other than H, then R_{13} must be H.

4,609,398
HERBICIDAL FLUOROETHOXY TRIAZINES

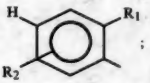
Michael D. Nicholson, and Gerald A. Roy, Jr., both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 625,911, Jun. 29, 1984, abandoned, which is a continuation-in-part of Ser. No. 587,063, Mar. 7, 1984, abandoned. This application Feb. 12, 1985, Ser. No. 699,174
Int. Cl.[4] C07D *251/46, 251/16, 405/12*; A01N *43/66*
U.S. Cl. 71—93 16 Claims

1. A compound of the formula



wherein
R is H or CH_3;
X is CH_3 or OCH_3;
Y is OCH_2CH_2F, OCH_2CHF_2 or OCH_2CF_3;
Z is N;
L is



L-1

R_1 is C_2–C_4 alkyl, C_2–C_4 alkoxy, $SO_2NR_8R_9$, $SO_2N(OCH_3)CH_3$ or 2-tetrahydrofuranyl;
R_2 is H, F, Cl, Br, CF_3, CH_3, OCH_3 or SCH_3;
R_8 is C_1–C_3 alkyl; and

R_9 is C_1–C_3 alkyl;
and their agriculturally suitable salts; provided that
(1) the total number of carbon atoms of R_8 and R_9 is less than or equal to four; and
(2) when R_1 is $SO_2NR_8R_9$, $SO_2N(OCH_3)CH_3$ or 2-tetrahydrofuranyl, then Y is OCH_2CH_2F or OCH_2CHF_2.

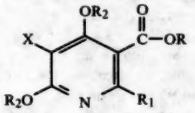
4,609,399

SUBSTITUTED 4,6-ALKOXY PYRIDINECARBOXYLATE COMPOUNDS AND HERBICIDAL USE

Len F. Lee, St. Charles, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 6, 1984, Ser. No. 668,790
Int. Cl.[4] A01N *43/40*; C07D *213/80*
U.S. Cl. 71—94 12 Claims

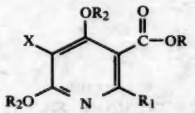
1. A compound represented by the generic formula



wherein:
R is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkynyl, haloalkyl, haloalkenyl;
R_1 is fluorinated methyl and chlorofluorinated methyl;
R_2 is selected from hydrogen and lower alkyl radicals; and
X is selected from

in which R_3 is hydrogen, or lower alkyl, lower alkenyl, lower alkynyl, or haloalkyl, and
carbalkoxyalkyl.

5. A herbicidal composition containing a carrier and a herbicidally effective amount of a compound represented by the generic formula



wherein:
R is selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl, haloalkyl, haloalkenyl;
R_1 is trifluoromethyl;
R_2 is a lower alkyl radical; and
X is selected from

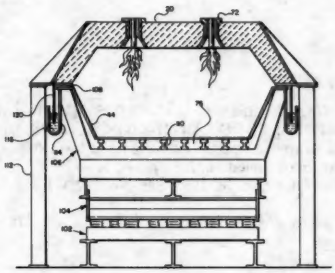
in which R_3 is lower alkyl, lower alkenyl, lower alkynyl, or haloalkyl, and
carbalkoxyalkyl.

4,609,400

METHOD AND APPARATUS FOR PREHEATING CHARGE MATERIALS FOR CONTINUOUS STEELMAKING

John A. Vallomy, Matthews, N.C., assignor to Intersteel Technology, Inc., Matthews, N.C.

Continuation-in-part of Ser. No. 720,225, Apr. 5, 1985, Pat. No. 4,564,388, which is a continuation-in-part of Ser. No. 636,944, Aug. 2, 1984, Pat. No. 4,543,124. This application Oct. 16, 1985, Ser. No. 787,959
Int. Cl.[4] C21C *7/00*; H05B *7/18*
U.S. Cl. 75—46 16 Claims



1. A method for the continuous preheating of charge materials for a steelmaking furnace, comprising;
a. continuously passing a desired mixture of sized iron-bearing material and other feed materials through a heating furnace;
b. maintaining a non-oxidizing atmosphere within the heating furnace by establishing a dynamic seal at the entrance end of the heating furnace;
c. heating the furnace and the material therein by directing burner flames downwardly onto the surface of the mixture passing through the furnace;
d. removing the products of combustion;
e. cooling the portion of said furnace in contact with said material mixture by passing cooling air beneath the underside of such portion of the furnace; and
f. discharging the heated mixture continuously and directly into a steelmaking furnace.

4,609,401

POWDERED MATERIAL FOR THERMAL SPRAYING

Wolfgang Simm, Ecublens, and Hans-Theo Steine, Chavannes, both of Switzerland, assignors to Castolin S.A., Saint-Sulpice, Switzerland

PCT No. PCT/CH84/00028, § 371 Date Oct. 18, 1984, § 102(e) Date Oct. 18, 1984, PCT Pub. No. WO84/03306, PCT Pub. Date Aug. 30, 1984
PCT Filed Feb. 20, 1984, Ser. No. 673,758
Claims priority, application Switzerland, Feb. 23, 1983, 1015/83
Int. Cl.[4] C22C *29/00, 32/00*
U.S. Cl. 75—252 4 Claims

1. A powdered material for thermal spraying comprising a mixture of a self-fluxing matrix alloy powder and of a powder of at least one metal carbide, the carbide content of the mixture consisting essentially between 20 and 80 percent by weight thereof and the matrix alloy having the following composition, in percent by weight:

Cr	18.0–35.0%
Fe	0.1–25.0%
B	0.5–4.5%
Si	0.5–5.5%
C	0.01–2.0%

-continued

Mo	0-15.0%
Nb	0-2.0% .
Ni	Remainder

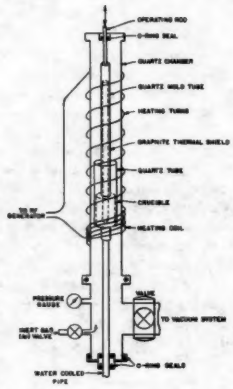
said powdered material characterized, when thermally sprayed onto a metal substrate to form a bonded coating thereon comprising particles of said carbide dispersed through a zone of said matrix metal, by a decreased presence of M_6C-carbide between said matrix zone and the carbide particles and by a marked improvement in elasticity and in resistance to corrosion and erosion.

4,609,402

METHOD OF FORMING MAGNETOSTRICTIVE RODS FROM RARE EARTH-IRON ALLOYS

O. Dale McMasters, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Oct. 28, 1985, Ser. No. 792,341
Int. Cl.[4] C22B *59/00*
U.S. Cl. 75—65 ZM **10 Claims**



1. In the manufacturing of rods of magnetostrictive alloys of iron with rare earth metals, said alloys including terbium (Tb) together with dysprosium (Dy) and/or holmium (Ho), the method steps comprising:

(a) forming a molten flowable body of said rare earth-iron alloy in a crucible enclosed within a chamber, the upper surface of said molten body being in contact with an inert gas within said chamber;

(b) providing an upwardly-extending hollow mold tube of refractory material positioned with its lower end portion within said molten body, the interior of said mold tube being separated from the gas in said chamber by said molten body;

(c) creating a pressure differential between said chamber gas and the interior of said mold tube forcing a portion of the molten alloy to rise in said mold tube to a selected level for forming a rod; and

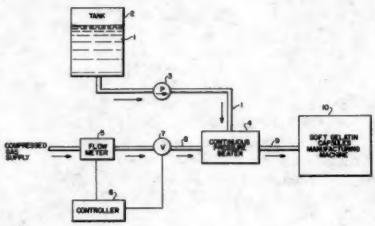
(d) maintaining a portion of said molten alloy in said crucible extending to a level above the lower end of said mold tube, solid particles of higher melting impurities present in said alloy collecting at the surface of said molten body and remaining within said crucible as said rod is formed in said mold tube.

4,609,403

FOAM SOFT GELATIN CAPSULES AND THEIR METHOD OF MANUFACTURE

Fritz Wittwer, Lupsingen, Switzerland, and Jean-Philippe Mayer, Colmar, France, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 12, 1984, Ser. No. 588,408
Int. Cl.[4] A61J *3/07;* **A61K** *9/48;* **C08J** *9/30;* **C08L** *89/04*
U.S. Cl. 106—122 **33 Claims**



1. A method for the production of foam soft gelatin capsules, which method comprises the steps of:

A. mixing dry gelatin and one or more plasticizers with water to make an aqueous mixture;

B. melting the aqueous mixture at a temperature range of between 65° to 95° C. to make a gelatin melt;

C. mixing a gas into the gelatin melt to make a gaseous gelatin melt;

D. microdispersing the gas into the gaseous gelatin melt to make a gelatin foam to provide a bubble diameter of 0.1 to 200 microns; and

E. molding the gelatin foam into foam soft gelatin capsules having a bubble diameter of 0.1 to 200 microns.

29. Foam soft gelatin capsules comprising gelatin and one or more plasticizers and having a gas microdispersed therein with bubbles of 0.1 to 200 microns.

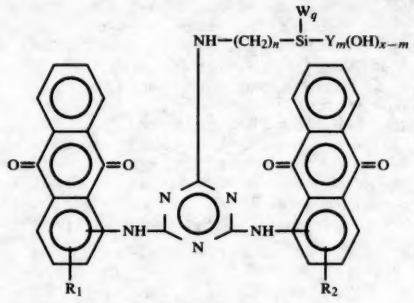
4,609,404

ORGANIC DYES CONTAINING SILANE GROUPS AND PROCESS FOR PREPARING SAME

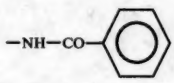
Antonio Marraccini, Dormeletto; Filippo M. Carlini, Novara; Antonio Pasquale, Novara, and Giorgio Maranzana, Novara, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Aug. 17, 1983, Ser. No. 524,083
Claims priority, application Italy, Aug. 20, 1982, 22915 A/82
Int. Cl.[4] C09C *1/28, 1/36*
U.S. Cl. 106—288 Q **15 Claims**

1. Composite pigments, consisting of s-triazinyl-bis-anthraquinone dyes, containing silane groups grafted on a support selected from the group consisting of TiO_2 gel, semi-crystalline, rutile, anatas TiO_2, associated with Al_2O_3, SiO_2, aluminum silicates, mica, talc and/or mixtures thereof having a value of the specific surface ranging between 5 and 500 m^2/g, said dyes having the formula:



wherein R_1 and R_2, equal to each other or different from each other, are selected from the group consisting of a hydrogen atom, a primary amine group (NH_2), a secondary amine group of the —NH—R type, wherein R is an alkyl group containing from 1 to 4 carbon atoms or a phenyl group, an —NH—CO—CH_3 acetylamino group, an



benzoylamino group, an —NO_2 nitro group, a halogen preferably bromine or chlorine, a hydroxyl radical, a phenol group and a thiophenol group;

n is a whole number comprised between 3 and 5

W indicates an alkyl group containing from 1 to 4 carbon atoms or a phenyl group;

Y indicates an alkoxy group containing from 1 to 4 carbon atoms

q is a whole number selected from 0–1

x and m are whole numbers such that, when q=0, x=3 and m=0, 1, 2, 3 and when q=1, x=2 and m=0, 1, 2.

4,609,405

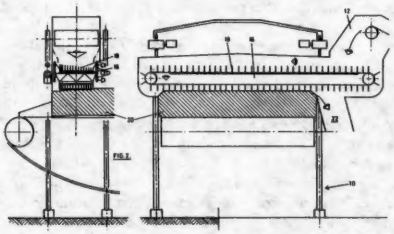
APPARATUS FOR FEEDING A DIFFUSER

Hilton F. Elliott, Durban, South Africa, assignor to Huletts Sugar Limited, Mount Edgecombe, South Africa

Filed Jul. 12, 1983, Ser. No. 513,104

Int. Cl.[4] C13D *1/12*

U.S. Cl. 127—3 **2 Claims**



1. In combination with a diffuser, an apparatus for feeding the diffuser including means to feed sugar cane material to be extracted into the diffuser, rake means to remove excess cane, said rake means constrained to move in a predetermined horizontal plane, wherein the rake means takes the form of an endless band or chain conveyor having a plurality of tines extending outwardly of the band and means are provided to measure the amount of excess cane, and further means are provided to control the feed rate of cane according to the measured amount of the excess cane.

4,609,406

RUST CONVERSION COATINGS

Arpad M. Magyar, Conroe; James G. Newsome, The Woodlands, both of Tex., and Darrell W. Patton, Wichita, Kans., assignors to Pennzoil Company, Houston, Tex.

Filed Sep. 5, 1984, Ser. No. 647,464

Int. Cl.[4] C23F *7/00*

U.S. Cl. 134—2 **16 Claims**

1. A rust conversion coating comprising:

(a) the previously formed ester and ether reaction products formed by the reaction of an excess of an alkane polyol with a polyhydroxybenzoic acid wherein water of condensation is removed as the ester and ether products are formed during the reaction;

(b) a film forming polymer; and

(c) water.

4,609,407

METHOD OF MAKING THREE DIMENSIONAL SEMICONDUCTOR DEVICES IN SELECTIVELY LASER REGROWN POLYSILICON OR AMORPHOUS SILICON LAYERS

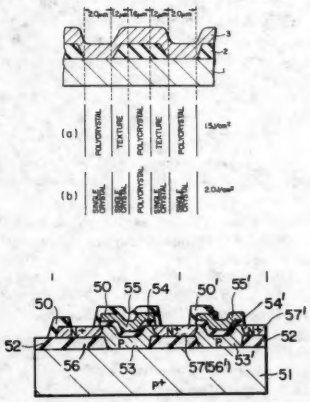
Tamura Masao, Tokorozawa; Hirotsugu Kozuka; Yasuo Wada, both of Tokyo; Makoto Ohkura; Tamura Hiroshi, both of Hachioji; Takashi Tokuyama, Higashikurume; Takahiro Okabe, Tokyo; Osamu Minato, Kodaira, and Shinya Ohba, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 209,113, Nov. 21, 1980, abandoned. This application Dec. 19, 1983, Ser. No. 563,036

Claims priority, application Japan, Nov. 21, 1979, 54-150080; Dec. 19, 1979, 54-164059

Int. Cl.[4] H01L *21/265, 21/26*

U.S. Cl. 148—1.5 **38 Claims**



1. A method of fabricating a semiconductor device, comprising:

(a) coating a surface of a single-crystalline silicon semiconductor substrate at a desired portion with an insulating film, said single-crystalline silicon semiconductor substrate having at least one impurity-doped region in its surface region;

(b) coating said single crystalline silicon semiconductor

substrate and said insulating film with either a polycrystalline silicon semiconductor film or an amorphous silicon semiconductor film such that at least a portion of the exposed surface of the single-crystalline silicon semiconductor substrate and a desired portion of the insulating film are continuously covered;

(c) irradiating the polycrystalline silicon semiconductor film or said amorphous silicon semiconductor film on the exposed surface of the single-crystalline semiconductor substrate and on the desired portion of the insulating film with a laser beam so that at least a portion of the irradiated film on said desired portion and the irradiated film on the exposed surface of the substrate is single-crystallized, so as to form a single-crystalline silicon semiconductor film continuously coating both the surface of said single-crystalline silicon semiconductor substrate and the desired portion of said insulating film, said single-crystalline silicon semiconductor substrate acting as a seed for the single-crystallizing of said at least a portion of the irradiated film on said desired portion and said irradiated film on the exposed surface of the single-crystalline silicon semiconductor substrate; and

(d) forming at least on pn-junction in the single-crystallized portion of the semiconductor film.

4,609,408

PROCESS FOR MANUFACTURING ALUMINUM THIN STRIP AND FOIL HAVING A LARGE FRACTION OF CUBE TEXTURE

Pedro Rodrigues, Schaffhausen; Heinz Bichsel, Neuhausen, both of Switzerland, and Frank Wehner, Singen, Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Aug. 10, 1984, Ser. No. 639,598

Claims priority, application Switzerland, Aug. 25, 1983, 4634/83

Int. Cl.[4] C22F *1/04*

U.S. Cl. 148—2 **23 Claims**

1. A process for producing aluminum strip characterized by a high degree of cube texture comprising:

casting at least 99.9% pure aluminum;

rolling said cast aluminum at a temperature of no more than 250° C. without intermediate anneals from a thickness of at least eight times final thickness to final thickness; and

final annealing said cold rolled strip at a temperature of between 480° to 640° C. so as to provide an aluminum strip characterized by at least 85% cube texture.

4,609,409

PROCESS OF HEAT TREATING COPPER FILM ON CERAMIC BODY AND HEAT TREATING APPARATUS THEREFOR

Atsuo Senda, Ootsu; Tohru Kasanami, and Takuji Nakagawa, both of Kyoto, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Division of Ser. No. 322,458, Nov. 18, 1981, abandoned, which is a division of Ser. No. 194,983, Oct. 8, 1980, Pat. No. 4,402,494. This application Nov. 9, 1984, Ser. No. 670,655

Int. Cl.[4] C21D *1/00*

U.S. Cl. 148—13 **14 Claims**

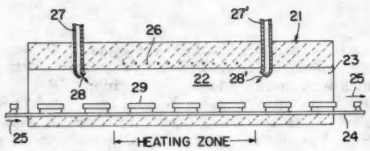
1. A process for heat treating a copper film formed on a ceramic, comprising the steps of:

placing at least one ceramic body having a surface and a copper film formed on at least a portion of said surface in a sealed chamber of a container, said container preventing gas located outside of said container from entering said chamber, said container permitting gas located in said chamber to discharge outside said container only when the pressure of said gas inside said chamber is increased above a predetermined level; and

applying heat to said container while maintaining the outside of said container in an inert atmosphere so as to heat both said at least one ceramic body and said gas located in said chamber to a sufficient temperature that the pressure of said gas located in said chamber is raised above said predetermined level whereby said gas located inside said chamber is at least partially evacuated from said chamber and said copper film is heat treated.

10. A process for heat treating a copper film formed on a ceramic, comprising the steps of:

providing a container having a chamber adapted to be sealed so as to prevent gas located outside of said container from entering said chamber and adapted to permit gas located in said chamber when said container is sealed to discharge outside said container only when the pressure of said gas inside said chamber is increased above a predetermined level;



placing at least one ceramic body having a surface and a copper film formed on at least a portion of said surface in said chamber;

sealing said chamber;

establishing an inert atmosphere outside said container; and

applying heat to said container while maintaining the outside of said container in said inert atmosphere so as to heat both said at least one ceramic body and said gas located in said chamber to a sufficient temperature that the pressure of the gas located in said chamber is raised above said predetermined level, whereby said gas located inside said chamber is at least partially evacuated from said chamber and said copper film is heat treated.

4,609,410

METHOD FOR PRODUCING HIGH-STRENGTH DEEP-DRAWABLE DUAL-PHASE STEEL SHEETS

Hsun Hu, Murrysville, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 212,786, Dec. 4, 1980, abandoned. This application Mar. 5, 1984, Ser. No. 585,611

Int. Cl.[4] C21D *9/52*

U.S. Cl. 148—142 **7 Claims**

1. A method for the production of a steel sheet product which exhibits a yield strength/tensile strength ratio less than 0.75, a yield strength increase of at least 10 ksi after straining 4% and an r_m value greater than 1.4, which comprises

box annealing and cooling a steel sheet to produce an r_m value greater than 1.5 in said sheet,

heating said sheet to a temperature above the A_1 thereof for a time and temperature sufficient to produce from 2 to 10% austenite therein,

cooling the sheet at a rate sufficient to transform at least a major portion of said austenite to decomposition products selected from the group of martensite, lower bainite, or combinations thereof, so as to produce such decomposition products in an amount of 2 to 10%, and

in which said steel has a composition consisting essentially of 0.02 to 0.15% uncombined carbon, less than 0.4% manganese and less than 500 ppm oxygen, balance iron, the total of the alloy elements therein being sufficient to provide a degree of hardenability effective to transform said austenite to said amount of decomposition products.

4,609,411

LIQUID-PHASE EPITAXIAL GROWTH METHOD OF A IIIB-VB GROUP COMPOUND

Yasuji Kohashi, Tsuchiura; Toshio Ishiwatari, Abiko, and Hisanori Fujita, Ibaraki, all of Japan, assignors to Mitsubishi Monsanto Chemical Co., Ltd. and Mitsubishi Chemical Industries, Ltd., both of Tokyo, Japan

Filed Jan. 25, 1985, Ser. No. 694,683

Claims priority, application Japan, Jan. 27, 1984, 59-13080

Int. Cl.[4] H01L *21/208*

U.S. Cl. 148—171 **7 Claims**

1. A method for epitaxially growing a single crystalline film of a Te-doped III–V group inorganic compound consisting of a IIIb group element and a Vb group element of the Periodic Table on a single crystalline substrate by means of liquid-phase epitaxial growth, characterized in that a Te source for doping consists of a single crystalline or polycrystalline III–V compound of said single crystalline film and which contains Te at a concentration of at least 1×10^{17} cm^{-3}.

4,609,412

AL-KILLED COLD-ROLLED STEEL SHEET WITH EXCELLENT DEMAGNETIZATION CHARACTERISTICS AND PROCESS FOR PRODUCING THE SAME, AND SHADOW MASK AND COLOR TELEVISION USING THE SAME

Morinori Kamio; Masahiro Tsuji; Susumu Kawauchi; Jun Ono; Hideki Isayama, all of Samukawa; Akihiko Nishimoto, Fukuyama; Yoshiharu Miyawaki, Fukuyama; Osamu Nozoe, Fukuyama, and Koji Iwase, Fukuyama, all of Japan, assignors to Nippon Mining Co., Ltd and Nippon Kokan Kabushiki Kaisha, both of Tokyo, Japan

Filed Feb. 25, 1985, Ser. No. 704,804

Claims priority, application Japan, Feb. 28, 1984, 59-35328; Jul. 23, 1984, 59-151429

Int. Cl.[4] C21D *9/52*

U.S. Cl. 148—12 C **3 Claims**

1. An Al-killed cold-rolled steel sheet with excellent demagnetization characteristics consisting essentially of 0.004% or less C; from 0.005 to 0.50% Mn; 0.010% or less S; from 0.01 to 0.08% Sol.Al; 0.0040% or less N; wherein Mn %/S %≧7 and (Sol.Al % - 0.003%)/N %≧6; the remainder iron and inevitable impurities.

4,609,413

METHOD FOR MANUFACTURING AND EPITAXIALLY ISOLATED SEMICONDUCTOR UTILIZING ETCH AND REFILL TECHNIQUE

Bernard W. Boland, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 18, 1983, Ser. No. 553,326

Int. Cl.[4] H01L *21/205, 21/76*

U.S. Cl. 148—175 **7 Claims**

1. A method for manufacturing isolated semiconductor device structures, comprising:

providing a semiconductor substrate of a first conductivity and type;

coating said substrate with a first epitaxial layer of a first predetermined thickness and of a second conductivity and type;

applying to said first epitaxial layer an etch resistant mask having an open portion in which a first portion of said first epitaxial layer is exposed for etching, and a closed portion in which a second portion of said first epitaxial layer is protected from etching;

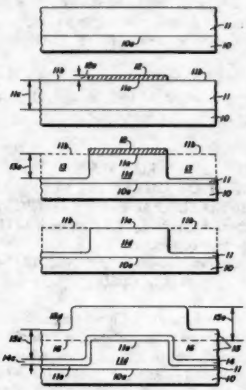
etching said first portion of said first epitaxial layer a first depth less than said first thickness thereby creating pedestals corresponding to said second portion of said first epitaxial layer;

removing said etch resistant mask;

forming on said first epitaxial layer a second epitaxial layer of a second thickness and a third conductivity and type;

forming on said second epitaxial layer a third epitaxial layer of a third thickness and a fourth conductivity and type, wherein the sum of said second thickness and said third thickness is at least equal to said first depth;

removing any portions of said second and third epitaxial layers protruding above said pedestal; and



forming said semiconductor device in said pedestal, wherein said first epitaxial layer of said pedestal is used as a current carrying electrode region of a bottom contact power device.

4,609,414

EMITTER FINGER STRUCTURE IN A SWITCHING TRANSISTOR

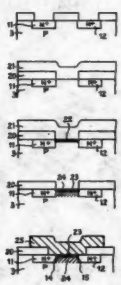
Philippe Bouard, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 6, 1983, Ser. No. 501,189

Claims priority, application France, Jun. 8, 1982, 82 09954

Int. Cl.[4] H01L *29/72, 21/24*

U.S. Cl. 148—179 **1 Claim**



1. A method for manufacturing a NPN bipolar transistor with interdigitated emitter and base fingers, each emitter finger comprising a central portion and two lateral portions, said central portion and lateral portions being contacted by a common emitter metallisation, said method comprising the following steps:

formation of said lateral portions by local phosphorous diffusion with a surface concentration greater than 10^{20} atoms/cm^3, said phosphorus diffusion extending at a first depth;

formation of silicon oxide masking the emitter and base fingers except in said central portion;

depositon of an arsenic doped gold layer on said silicon oxide and said central portion;
formation of a gold/silicon eutectic in said central portion;
selective removal of said gold layer where an eutectic has not been formed;
simultaneous diffusion of gold and arsenic in said central portion, said gold diffusing down to a depth approximately equal to said first depth and said arsenic diffusing down to a second depth much smaller than said first depth;
removal of said silicon oxide above said lateral portions at least in regions adjacent to said central portion; and
deposition of an emitter metallisation.

4,609,415

ENHANCEMENT OF EMULSIFICATION RATE USING COMBINED SURFACTANT COMPOSITION

Richard V. Cartwright, Sussex, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jan. 19, 1984, Ser. No. 572,096
Int. Cl.[4] C06B *45/00*
U.S. Cl. 149—2 **25 Claims**

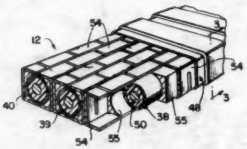
1. In a process for forming an invert emulsion blasting agent obtained by admixing (a) an oil phase containing a sorbitan fatty acid ester emulsifier in a hydrocarbon solvent, and (b) an aqueous phase containing at least one water soluble inorganic oxidizer salt; the improvement comprising modifying the blasting agent by precombining said sorbitan ester emulsifier with an active amount of a nitrogen-containing surfactant selected from the group consisting of a fatty acid amide, a fatty acid amine and corresponding salts thereof, in which the hydrocarbon group of the nitrogen-containing surfactant is a straight chain having about 10–20 carbon atoms.

4,609,416

METHOD FOR MAKING ARMORED ELECTRICAL CABLE

John E. Himmelberger, Seymour, and James O. Scharf, Oxford, both of Conn., assignors to Harvey Hubbell Incorporated, Orange, Conn.

Division of Ser. No. 566,556, Dec. 29, 1983, Pat. No. 4,539,739.
This application Jun. 5, 1985, Ser. No. 741,739
Int. Cl.[4] H01B *13/26*
U.S. Cl. 156—53 **15 Claims**



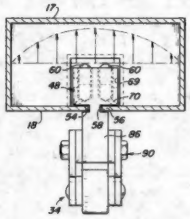
1. A method of constructing an armored electrical cable comprising the steps of:
providing a conveyor, a positioning table and a guide assembly in an assembly line,
positioning a plurality of sources of struts adjacent the conveyor,
feeding the struts onto the conveyor in a spaced relationship and then feeding the struts from the conveyor onto the positioning table,
positioning a plurality of conductor sources adjacent the positioning table,
feeding the conductors from the conductor sources onto the positioning table in predetermined relationships to the struts,
feeding the conductors and struts from the positioning table to the guide assembly,
converging the conductors and struts in the guide assembly to form a cable core,
wrapping an armor covering around the cable core, and
rolling the completed cable onto a reel.

4,609,417

CAPSULE SEALER AND METHOD OF SEALING

Franklin J. Smith, Diablo, Calif., assignor to Microdry Corporation, San Ramon, Calif.

Filed Mar. 26, 1984, Ser. No. 592,569
Int. Cl.[4] B65B *7/00*; B32B *31/00*; B65D *83/04*
U.S. Cl. 156—69 **16 Claims**



1. A method of sealing together the interfitted tubular portions of a pair of dielectric container members, comprising the steps of
transporting said interfitted tubular portions of said container members through a waveguide, said waveguide having a wall with a slot therein extending in a direction parallel to the longitudinal axis of the waveguide, said container members being transported by a dielectric carrier received within the slot of said wall,
exciting said waveguide with microwave energy to develop in said waveguide an electric field extending parallel to the axis of said tubular portions as they travel through said waveguide,
controlling the strength of said electric field and the residence time of said container members in said waveguide to cause only said interfitted portions of said container members to melt, and
permitting said interfitted tubular container portions to cool and thereby to become fused together.

7. Apparatus for use in sealing together interfitted, tubular members formed of a heat soluble, dielectric material, comprising in combination
a rectangular waveguide,
a conveyor disposed adjacent the exterior side of one wall of said waveguide for travel in a direction parallel to the longitudinal axis of said waveguide,
said wall having a slot therein extending in a direction parallel to said axis,
a plurality of dielectric carriers mounted to said conveyor and partially disposed in said waveguide with the longitudinal edges of said slot extending into respective ones of oppositely disposed, coplanar grooves in said carriers,
at least one pocket is provided in each of said carriers for receiving one assembled pair of said interfitted tubular members, said pocket being disposed within said waveguide to carry said members therethrough, and
means for exciting said waveguide with microwave energy.

4,609,418

HOLLOW CONTAINER OF BIAXIALLY ORIENTED SYNTHETIC RESIN ENGAGED WITH BASE CAP ON BOTTOM AND METHOD OF ENGAGING THE CAP WITH THE CONTAINER

Yataro Yoshino; Mamoru Oshida, and Katsuji Mitani, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Division of Ser. No. 494,704, May 16, 1983. This application Jul. 17, 1985, Ser. No. 755,781

Int. Cl.[4] B32B *31/00*

U.S. Cl. 156—87 8 Claims

1. A method of engaging a hollow container of biaxially oriented synthetic resin at the bottom portion of the shape of regular circular cross section and swelled downwardly in a spherical shape with a base cap erected with the peripheral wall from the peripheral wall of said bottom wall comprising the steps of;

forming the peripheral wall of said base cap in an elastically deformable state, forming the upper cross sectional shape of said peripheral wall in an elliptical shape by pressing inwardly both right and left sides thereof, contacting the upper end portion of the short diameter portion of the peripheral wall of said base cap with the lower surface of the bottom portion of said container, pressing said container as it is and engaging the outer surface of the bottom portion of said container with said base cap while deforming the peripheral wall of said base cap.

8. The method according to claim 4, wherein said rod has a diameter sufficiently thin to be inserted between the bottom portion of said container and the peripheral wall of said base cap.

4,609,419

HOSIERY TOE CLOSING METHOD AND APPARATUS

Michael J. Hodges, High Wycombe, England, assignor to Detexomat Machinery Limited, Buckinghamshire, England

Filed Aug. 19, 1985, Ser. No. 766,566

Claims priority, application United Kingdom, Sep. 5, 1984, 8422370

Int. Cl.[4] B32B *31/02*

U.S. Cl. 156—152 22 Claims

1. A method for closing the toe of a tubular hose blank comprising the steps of:

(a) placing said blank in a flattened condition defining juxtaposed layers at an open end of same;

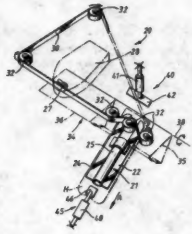
(b) longitudinally displacing one of said layers with respect to said other layer; and

(c) joining said layers along a predetermined line across said blank while maintaining the relative displacement between said layers.

8. Apparatus for closing the toe of a tubular hose blank comprising:

(a) means for mounting said blank in a flattened condition with juxtaposed layers at an outer, open end of same;

(b) means for relatively displacing one of said blank layers longitudinally with respect to said other layer and maintaining the longitudinal relative displacement; and



(c) means for joining said blank layers along a predetermined line across said blank while said longitudinal relative displacement is maintained.

4,609,420

ADHESION OF LAYERS OF ADHESIVE WHICH ARE APPLIED ONTO POLYOLEFIN SURFACES FROM AQUEOUS DISPERSION

Oral Aydin; Hans Kast, both of Mannheim, and Hans-Joachim Fricke, Dirmstein, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Dec. 3, 1984, Ser. No. 677,505

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1983, 3343779

Int. Cl.[4] B32B *31/00*

U.S. Cl. 156—272.6 10 Claims

1. A process for improving the adhesion of a layer of adhesive which is applied onto a polyolefin surface from aqueous dispersion comprising the steps of pretreating a polyolefin surface by corona discharge and applying a carboxylic acid dihydrazide of 2 to 10 carbon atoms and an aqueous dispersion of an adhesive polymer onto said polyolefin surface.

4,609,421

AUTOMATIC ENVELOPE SEALING DEVICE

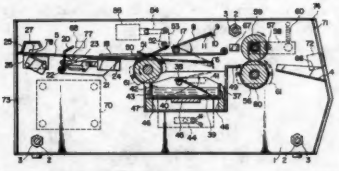
Yoshikazu Yui, Chiba, Japan, assignor to Silver Seiko Ltd., Japan

Filed Feb. 11, 1985, Ser. No. 699,727

Claims priority, application Japan, Feb. 15, 1984, 59-26825

Int. Cl.[4] B65B *51/02*

U.S. Cl. 156—442.1 10 Claims



1. An automatic envelope sealing device, comprising: an envelope receiving table for receiving an envelope thereon; a receiving plate mounted at an end of said envelope receiving table and located below an envelope placed on said envelope receiving table and at a position adjacent to a flap of such envelope, said receiving plate having a portion extending upwardly from the forward edge of said receiving table; and bending means located above and corresponding to said receiving plate and mounted for downward movement into engagement with said receiving plate for bending the flap of

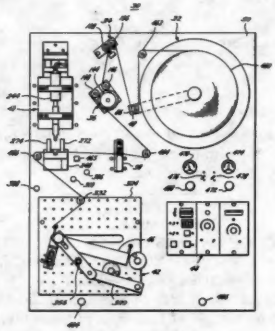
the envelope downwardly over said upwardly extending portion.

4,609,422

PRINTER RIBBON CARTRIDGE LOADING SYSTEM

Paul E. Becking, 13,195 Paseo Barranco, Salinas, Calif. 93908

Filed Feb. 3, 1984, Ser. No. 576,855
Int. Cl.[4] B31F *5/00*
U.S. Cl. 156—502 **8 Claims**



1. Apparatus for stuffing ribbon into a continuous loop printer ribbon cartridge, comprising:

a plate means;

means connected to said plate means for supplying ribbon to the cartridge;

a platen means attached to said plate means for receiving the cartridge, said platen means including:

a platen plate,

at least first and second means pivotably secured to said platen plate for supporting the cartridge,

means for retaining against said platen plate the cartridge borne by said support means, and

means for changing the point of attachment of said support means on said platen plate to accommodate different configurations of cartridges to be stuffed with ribbon; and

drive means connected to said plate means for drawing ribbon into the cartridge.

4,609,423

APPARATUS FOR MAKING A WEB OF PLASTIC MATERIAL

Arthur A. Zufang, St. Anthonis, and Robert A. M. J. Fabrie, 's-Hertogenbosch, both of Netherlands, assignors to Stork Brabant BV, Netherlands

Filed Nov. 8, 1983, Ser. No. 549,970
Int. Cl.[4] B31F *5/00*
U.S. Cl. 156—555 **5 Claims**

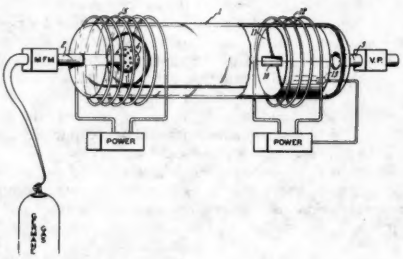
1. An apparatus for manufacturing a web of plastic material, particularly a web of plastic material with filtering properties, by subjecting a web-shaped base material to heat treatment while retaining said base material in such a manner that said base material is subjected to a controlled stretch of shrinkage by mounting such base material in a pretensioned state, in which the base material passes through a region located between a roller and an endless band at least partially slung around said roller, while heat is supplied, and while the material is maintained in its original shape and appearance comprising a central roller cooperating with at least a first endless band which is, at least partially slung around the circumference of a central roller, as well as guide roller and pressure-adjusting roller for pressing the band(s) against the surface of the central roller with controllable force, said apparatus being provided with at least one heat-supply member and at least one cooling member, said pressure-adjusting roller engaging said band in a region where the band is not in engagement with said central roller.

4,609,424

PLASMA ENHANCED DEPOSITION OF SEMICONDUCTORS

Alexander J. Shuskus, West Hartford, Conn., and Melvyn E. Cowher, East Brookfield, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 524,803, Aug. 18, 1983, abandoned, which is a division of Ser. No. 266,545, May 22, 1981, Pat. No. 4,421,592. This application Oct. 28, 1985, Ser. No. 793,451
Int. Cl.[4] C30B *25/10*
U.S. Cl. 156—613 **1 Claim**



1. An apparatus for depositing large single crystal semiconductor thin films on the surface of an alkali halide substrate which comprises:

a. a reaction chamber and means associated therewith for maintaining said chamber at a controllable low pressure;

b. means for generating a plasma within the reaction chamber, said plasma being generated in a portion of the chamber having a first cross section so that the plasma flows at a first rate in the region where it is generated;

c. single crystal alkali halide substrate within the reaction chamber located in a portion of the reaction chamber having a second cross section which is less than the first cross section so that the plasma velocity in the vicinity of the said substrate is greater than the first plasma velocity, and means for maintaining the substrate at a controlled elevated temperature;

d. means for flowing a semiconductor precursor gas through the reaction chamber and over the substrate, with the direction of flow being parallel to a line lying in the substrate surface to be coated, and means for removing said gas after it has passed over the substrate.

4,609,425

COLD CRUCIBLE SYSTEM AND METHOD FOR THE MEETING AND CRYSTALLIZATION OF NON-METALLIC INORGANIC COMPOUNDS

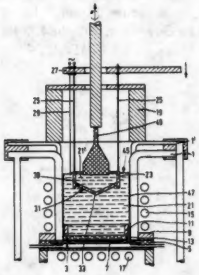
Dieter W. Mateika, Ellerbek, and Rolf Laurien, Pinneberg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 2, 1984, Ser. No. 606,020

Claims priority, application Fed. Rep. of Germany, May 6, 1983, 3316547

Int. Cl.[4] C30B *15/10, 15/24*

U.S. Cl. 156—617 SP 18 Claims



1. A cold crucible system for melting and crystallizing a non-metallic inorganic compound comprising a crucible having a wall section and a bottom (3), said wall section being formed of hollow metal pipes having a cooling medium flow therethrough said pipes being mechanically connected to said bottom for providing flow of said cooling medium through said bottom; a first inductance coil surrounding the wall section of said crucible, a second induction coil, independently switchable of said first induction coil and positioned below the bottom of said crucible, both of said induction coils providing a coupling of high frequency energy into any non-metallic inorganic compound present in said crucible and providing a melt of said compound in said crucible, wherein said crucible contains a member (11) of an electrically conductive material, rapidly heatable by induced eddy currents and inert to any melt (21) present in said crucible, positioned at a distance above the bottom (3) of said crucible and a container (23) consisting of a material inert to melt (21) present in said crucible, open in the direction opposite to that of the bottom of said crucible, provided with apertures (33, 39, 43) for passage of said melt and being of such a capacity and so positionable in relation to the wall section and the bottom of said crucible so as to contain up to 25% of the overall contents of said non-metallic inorganic compound present in said crucible while having an upper edge projecting from said crucible and means connected to said container for vertically moving said container in and out of said crucible.

4,609,426

METHOD AND APPARATUS FOR MONITORING ETCHING

Yoshifumi Ogawa; Masaharu Nishiumi; Yoshie Tanaka, all of Kudamatsu; Sadayuki Okudaira, Oume, and Shigeru Nishimatsu, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 22, 1985, Ser. No. 736,769

Claims priority, application Japan, May 23, 1984, 59-102523

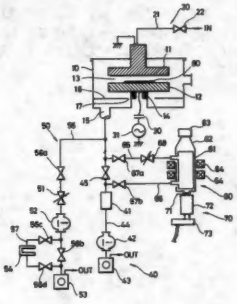
Int. Cl.[4] H01L *21/306;* B44C *1/22;* C03C *15/00;* C23F *1/02*

U.S. Cl. 156—626 11 Claims

1. A method of monitoring etching which comprises the steps of:

regulating a gas pressure in a treating chamber, in which a sample is being etched by a dry etching process, to a pressure at which a emission line spectrum can be clarified;

Converting the gas having the pressure thereof regulated to plasma; and



monitoring the etching state of said sample from the change of the intensity of the emission line spectrum of the plasma with time.

4,609,427

METHOD FOR PRODUCING INK JET RECORDING HEAD

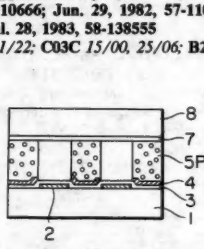
Tadayoshi Inamoto, Machida; Masami Yokota, Hiratsuka, and Hiroshi Sugitani, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 507,579, Jun. 24, 1983, abandoned. This application Jul. 26, 1984, Ser. No. 634,439

Claims priority, application Japan, Jun. 25, 1982, 57-109446; Jun. 29, 1982, 57-110666; Jun. 29, 1982, 57-110667; Jun. 29, 1982, 57-110668; Jul. 28, 1983, 58-138555

Int. Cl.[4] B44C *1/22;* C03C *15/00, 25/06;* B29C *17/08*

U.S. Cl. 156—633 28 Claims



1. In the method for producing an ink jet head by forming walls of an ink flow path of a film of a photosensitive resin on at least one surface of a substance with an ink discharging pressure generating element, a protective layer and an auxiliary layer sequentially interposed therebetween, removing simultaneously with the formation or following formation of the walls, portions of the auxiliary layer existing within the ink flow path and then providing a covering member on the ink flow path, the improvement which comprises;

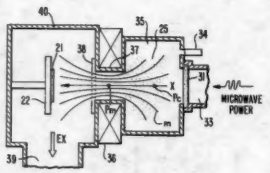
(a) employing a protective layer of at least one of an inorganic oxide and an inorganic nitride; and

(b) employing as the auxiliary layer a silane coupling agent or at least one organometallic compound selected from the group consisting of metal alcoholates, metal carboxylates, and metal chelate compounds.

4,609,428
METHOD AND APPARATUS FOR MICROWAVE PLASMA ANISOTROPIC DRY ETCHING

Shuzo Fujimura, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 18, 1985, Ser. No. 756,233
Claims priority, application Japan, Jul. 23, 1984, 59-152363
Int. Cl.[4] H01L *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*
U.S. Cl. 156—643 **24 Claims**



18. A method of anisotorpic plasma etching in a microwave plasma etching apparatus incuding a vacuum vessel having a plasma generating chamber, a reaction chamber, and a connecting chamber connecting the plasma generating chamber and the connecting chamber, the connecting chamber having an axis, comprising the steps of:

(a) evacuating the vacuum vessel and back-filling the vacuum vessel with an ionizable gas;

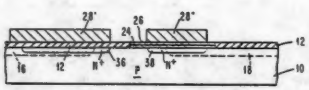
(b) applying microwave energy to the plasma generating chamber to generate a plasma; and

(c) generating a magnetic field having a cyclotron resonance point in the plasma generating chamber for causing a cyclotron resonance of electrons in the plasma corresonding to the predetermined frequency of the microwave power, and having a peak point in the connecting chamber at which said magnetic field intensity has a maximum value and functions as a magnetic mirror for reflecting the electrons in the plasma while allowing the free radicals and ions to pass the magnetic mirror along the axis of the connecting chamber to impinge on the workpiece, thereby to perform substantially anisotropic plasma etching of the workpiece.

4,609,429
PROCESS FOR MAKING A SMALL DYNAMIC MEMORY CELL STRUCTURE

Mousa H. Ishaq, Essex Junction, and Wendell P. Noble, Jr., Milton, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 2, 1984, Ser. No. 627,250
Int. Cl.[4] H01L *21/265, 21/302*
U.S. Cl. 156—656 **14 Claims**



1. A process for making a conductive structure which includes the steps of:

depositing a patterned conductive layer having edges on a surface of a semiconductor substrate and in contact therewith, said substrate having a given type conductivity,

depositing a layer of polysilicon over said conductive layer and in contact therewith, said conductive layer having a significantly different etch rate than that of said layer of polysilicon,

depositing a layer of photoresist over said polysilicon layer,

defining an opening in said photoresist layer within the edges of said conductive layer,

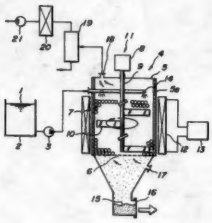
implanting ions of a conductivity type opposite to that of said given type conductivity through said opening and said polysilicon and conductive layers into said semiconductor substrate to form therein a highly conductive pocket having said opposite type conductivity, and

etching said layer of polysilicon without said opening to said conductive layer.

4,609,430
LIQUID MATERIAL DRYING APPARATUS

Magoji Okamoto, Nagoya, Japan, assignor to NGK Insulators, Ltd., Nagoya, Japan

Filed Mar. 4, 1985, Ser. No. 707,678
Claims priority, application Japan, Mar. 7, 1984, 59-44724; Jun. 27, 1984, 59-133549; Jun. 27, 1984, 59-133550
Int. Cl.[4] B01D *1/24*
U.S. Cl. 159—29 **10 Claims**



1. A liquid material drying apparatus comprising:

a vessel with a liquid material inlet port provided at an upper potion thereof for supplying a liquid material, and a dried powder outlet port provided at a lower portion thereof for delivering dried powder;

a support plate arranged in said vessel;

a great number of spherical bodies piled on said support plate;

liquid supply means provided above said spherical bodies within said vessel for spreading the liquid material onto the spherical bodies to dry the liquid material;

heating means for heating said spherical bodies;

stirring means including a driving shaft vertically extending above said support plate within said vessel and a plurality of stirring blades fixed to said driving shaft in horizontal directions for rolling said spherical bodies;

wherein said support plate is formed with slits concentric to each other about said driving shaft of said stirring means, and the lowermost stirring blade of said plurality of stirring blades has pins affixed thereto so as to extend into said slits and to rotate together with said lowermost stirring blade.

4,609,431
NON-WOVEN FIBROUS COMPOSITE MATERIALS AND METHOD FOR THE PREPARATION THEREOF

Reginald E. Grose, Westminster, Md., and Willard E. Carlson, Darien, Conn., assignors to Congoleum Corporation, Kearny, N.J.

Filed Jul. 26, 1984, Ser. No. 634,724
Int. Cl.[4] D21H *1/10, 3/36*
U.S. Cl. 162—135 **23 Claims**

1. A process for the preparation of non-woven, fibrous composite materials, which process comprises the steps of:

a. separately mixing together with at least a sufficient quantity of water to form a first aqueous dispersion,

i. a cellulose fiber component comprising at least about 15 percent of the composite materials and further comprising predominately softwood pulp fibers, which fibers in the form of a TAPPI Standard Handsheet have a breaking length of at least eight kilometers (8 km) and a

density of at least sixty-seven one-hundredths of a gram per cubic centimeter (0.67 g/cc), and

ii. a filler component comprising at least about 20 percent of the composite materials and further comprising at least one particulate anionic, water-insoluble inorganic filler;

b. mixing together with a least a sufficient quantity of water to form a second aqueous dispersion, a latex blend component comprising at least about 20 percent of the composite materials and further comprising

i. a soft resin component comprising an anionic, water-insoluble soft acrylic binder resin, which resin has a glass transition temperature of from −30° C. to −10° C., and

ii. a hard resin component comprising an anionic, water-insoluble hard acrylic binder resin, which resin has a glass transition temperature of from 20° C. to 40° C.;

c. mixing together with at least a sufficient quantity of water to form a third aqueous dispersion,

i. a non-cellulosic fiber component comprising at least one water-dispersible fiber chosen from the group consisting of glass fibers, rock wool and other mineral fibers;

d. preparing a first combined aqueous dispersion by combining the first aqueous dispersion prepared in step (a) with the second aqueous dispersion prepared in step (b);

e. adding to the first combined aqueous dispersion prepared in step (d), an amount in excess of that required to effectively destabilize the first combined aqueous dispersion and cause coagulation and absorption of the latices and filler by the cellulosis fibers, a first flocculant component comprising at least one water-soluble cationic organic wet-strength resin flocculant;

f. preparing a second combined aqueous dispersion by combining the first combined aqueous dispersion prepared in step (d) with the third aqueous dispersion prepared in step (c);

g. adding to the second combined aqueous dispersion prepared in step (f) a second flocculant component comprising an anionic organic flocculant in a sufficient quantity to adjust the electrokinetic potential of said second combined aqueous dispersion to from about −10 millivolts to about +10 millivolts;

h. precipitating substantially all of said resin components and filler component into a bonded relationship with said cellulosic and non-cellulosic fibrous components

i. forming said precipitated components of step h. into a sheet.

4,609,432

METHOD OF MAKING PAPER HAVING IMPROVED TEARING STRENGTH

Albert Brucato, Seattle, Wash., assignor to Brooks Rand Ltd., Seattle, Wash.

Continuation-in-part of Ser. No. 410,434, Aug. 23, 1982, abandoned, which is a continuation-in-part of Ser. No. 265,811, May 21, 1981, Pat. No. 4,347,100. This application Jun. 15, 1984, Ser. No. 621,139

Int. Cl.⁴ D21H *5/12*

U.S. Cl. 162—141 **28 Claims**

1. A method of making paper having improved tearing strength by introducing fiber bonds of increased strength that are distributed non-uniformly on a microscale, said method comprising the steps of

providing a first aqueous slurry of a refined cellulosic pulp comprising a principal fiber,

providing a second aqueous slurry of a cellulosic pulp that comprises an added fiber and that is unrefined or that has a substantially lesser degree of refining than the pulp of said first slurry so that said added fiber is longer and stronger than said principal fiber,

incorporating only in the second of said slurries a heat activatable fiber bonding agent that adheres to said added fiber to provide chemically unreacted fiber that is coated with said bonding agent, whereby said coated added fiber is capable of forming stronger bonds with the principal fiber or with itself than the principal fiber can form with itself,

thereafter admixing a predetermined amount of said second slurry with a predetermined amount of said first slurry to provide a furnish in which the fiber content is predominantly said principal fiber with a minor amount of said added fiber coated with said bonding agent, and

forming said furnish into a sheet and heat drying the sheet to activate said bonding agent and thereby effect enhanced bonding of said added fiber in the finished sheet,

whereby said finished sheet comprises a relatively coarse network of said added fiber interposed within, and having bonds of increased strength with, a relatively fine network of said principal fiber, and said bonds of increased strength being distributed non-uniformly on a microscale, whereby a tearing stress applied to the sheet is dispersed by said added fiber around the moving point of tear propagation.

4,609,433

SHEET COMPOSITES CONTAINING CRYSTALLINE PHOSPHATE FIBERS

Marvin M. Crutchfield, Creve Coeur, and John A. Hinkebein, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 24, 1984, Ser. No. 685,569

Int. Cl.⁴ D21H *5/18*

U.S. Cl. 162—145 **24 Claims**

1. A sheet composite containing crystalline phosphate fibers comprising:

(a) as the major fiber component, asbestiform crystalline calcium M phosphate fibers wherein M is a metal cation selected from the group consisting of sodium and lithium, and mixtures thereof;

(b) as the minor fiber component, auxiliary fibers selected from the group consisting of cellulosic fibers, glass fibers, rayon fibers, graphite fibers, polyamide fibers, polyester fibers, polyolefin fibers, and poly(vinyl chloride) fibers; and

(c) a water insoluble organic polymeric binder.

4,609,434

COMPOSITE SHEET PREPARED WITH STABLE LATEXES CONTAINING PHOSPHORUS SURFACE GROUPS

Bettye W. Greene, and Sun-Lin Chen, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 562,886, Dec. 19, 1983, Pat. No. 4,506,057. This application Oct. 11, 1984, Ser. No. 659,735

Int. Cl.⁴ D21H *3/48*

U.S. Cl. 162—168.1 **10 Claims**

1. A method for preparing a composite sheet comprising the steps of:

(a) adding from about 2 to about 30 percent of a modified latex composition containing a phosphorus surface active group comprising:

(1) at least one ethylenically unsaturated synthetic monomer which is emulsion polymerized with

(2) a phosphorus compound whereby a phosphorus surface group is irreversibly bound to said latex by covalent bonding or adsorption such that said phosphorus group is not desorbed into an aqueous medium on diluting or formulating said latex, said phosphorus compound being an organic phosphonate and/or an organic phosphate surfactant compound, wherein said phosphorus compound is present in at least an amount to emulsify said monomer,

to an aqueous dispersion comprising a water-dispersible fiber and an inorganic filler, said modified latex being present in at least an amount to increase filler retention;

(b) colloidally destabilizing the resulting mixture to form a fibrous agglomerate in aqueous suspension;

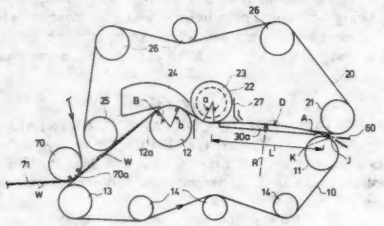
(c) distributing and draining said aqueous suspension on a porous support to form a wet web; and
(d) drying said web.

4,609,435

PROCESS AND EQUIPMENT IN THE FORMING OF PAPER WEB

Martti Tissari, Jyväskylä, Finland, assignor to Valmet Oy, Finland

Filed Jan. 22, 1985, Ser. No. 693,170
Claims priority, application Finland, Jan. 20, 1984, 840246
Int. Cl.[4] D21F *1/00*
U.S. Cl. 162—203 **12 Claims**



1. In a paper machine, a process in the forming of paper web and in the dewatering of pulp web and of paper web being formed, comprising the steps of:

feeding a pulp suspension jet from a headbox slice into a gap formed by a looped carrying wire and a looped covering wire, said looped carrying and covering wires having joint runs defining a twin-wire forming zone which begins immediately following said gap and in which a pulp web is formed;

passing said twin-wire forming zone over dewatering means situated within the loop of said carrying wire for imparting a first gently curved configuration to an initial portion of said twin-wire forming zone immediately following said gap, the curve defined by said first curved configuration having a radius of a length in the range of between about 5 to 50 meters and extending to the side of said carrying wire so that said initial portion of said twin-wire forming zone is curved towards the carrying wire loop, by which centrifugal forces acting on the pulp web in said initial portion of said twin-wire forming zone passing over said dewatering means is insufficient to cause substantial splashing at an inner face of said covering wire loop;

passing an intermediate portion of said twin-wire forming zone over a sector of an open-faced first forming roller situated within the loop of said covering wire substantially immediately after said dewatering means to impart a second curved configuration to said intermediate portion of said twin-wire forming zone which is curved towards said covering wire loop;

passing a subsequent portion of said twin-wire forming zone over a sector of a second forming roller situated within the loop of said carrying wire substantially immediately after said first forming roller to impart a third curved configuration to said subsequent portion of said twin-wire forming zone which is curved towards said carrying wire loop in the same direction as the curvature of the initial portion; and

detaching the formed web from said forming wire and transferring the web into a press section of the paper machine.

8. In a paper machine, apparatus for forming a paper web and dewatering a pulp web and a paper web being formed, comprising:

a headbox slice;

a looped carrying wire;

a looped covering wire;

said looped carrying and covering wires defining a gap located to receive a pulp suspension jet from the headbox slice, said carrying and covering wires having joint runs defining a twin-wire forming zone beginning immediately after said gap in which a pulp web is formed;

dewatering means situated within the loop of said carrying wire for imparting a first gently curved configuration to an initial portion of said twin-wire forming zone immediately following said gap, the curve defined by first curved configuration having a radius of a length in the range of between about 5 to 50 meters and extending to the side of said carrying wire so that said initial portion of twin-wire forming zone is curved towards the carrying wire loop, by which centrifugal force acting on the pulp web in said initial portion of said twin-wire forming zone passing over said dewatering means is insufficient to cause substantial splashing at an inner face of said covering wire loop;

an open-faced first forming roller situated within the loop of said covering wire substantially immediately after said dewatering means over a sector of which an intermidiate portion of said twin-wire forming zone passes to impart a second curved configuration to said intermediate portion of said twin-wire forming zone which is curved towards said covering wire loop; and

a second forming roller situated within the loop of said carrying wire substantially immediately after said first forming roller over a sector of which a subsequent portion of said twin-wire forming zone passes to impart a third curved configuration to said subsequent portion of said twin-wire forming zone which is curved towards said carrying wire loop in the same direction as the curvature of the initial portion.

4,609,436

PROCESS FOR DECOLORIZING POLYETHYLENE POLYAMINES WITH A CHLORINATED HYDROCARBON

Jacobus T. M. Bakkum, Hulst, Netherlands, assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 4, 1985, Ser. No. 688,776
Claims priority, application Netherlands, Jan. 6, 1984, 8400051
Int. Cl.[4] B01D *3/10*; C07C *87/00*
U.S. Cl. 203—6 **18 Claims**

1. A process for decolorizing a discolored polyethylene polyamine which comprises contacting the discolored polyethylene polyamine with a chlorinated hydrocarbon liquid at conditions sufficient to decolorize the polyethylene polyamine and distilling the resultant mixture to separate the decolored polyethylene polyamine as an overhead product.

4,609,437

METHOD OF MANUFACTURING AN OPTICAL FIBER COMPRISING A COATING OF A METAL

Johan C. W. Kruishoop; Petrus E. J. Legierse; Johannes Van Ruler, and Dirk J. Broer, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 12, 1985, Ser. No. 710,816
Claims priority, application Netherlands, Mar. 16, 1984, 8400843
Int. Cl.[4] C25D *5/56, 7/00*
U.S. Cl. 204—28 **5 Claims**

1. A method of manufacturing an optical fiber with a coating of a metal, in which method a fiber, at least the outer circumference of which consists of a synthetic resin, is provided with an electrically conductive layer upon which conductive layer a metal coating is provided by electroplating, characterized in that, in a continuous process, an electrically conductive layer of metal is provided on said fiber by the electrodeless deposition achieved by the reduction of a metal salt applied to said outer circumference and a layer of a metal is then provided on said electrically conductive layer by electroplating.

4,609,438
PROCESS FOR PREPARING THIOSULFONATE DERIVATIVES

Sigeru Torii; Hideo Tanaka, both of Okayama; Michio Sasaoka; Seiryu Uto, both of Tokushima, and Yutaka Kameyama, Okayama, all of Japan, assignors to Otsuka Kagaku Kabushiki Kaisha, Osaka, Japan

Filed Nov. 20, 1984, Ser. No. 673,309
Claims priority, application Japan, Nov. 25, 1983, 58-222969
Int. Cl.[4] C25B *3/00*
U.S. Cl. 204—72 **12 Claims**

1. A process for preparing a thiosulfonate derivative represented by the formula

$$R^2SO_2SR^1 \quad \text{(III)}$$

wherein R^1 is substituted or unsubstituted 2-benzothiazolyl, and R^2 is substituted or unsubstituted phenyl, the process being characterized in that a compound represented by the formula

$$R^1SX \quad \text{(I)}$$

wherein R^1 is as defined above, and X is hydrogen, alkali metal or SR^1, and a sulfinic acid or a salt thereof represented by the formula

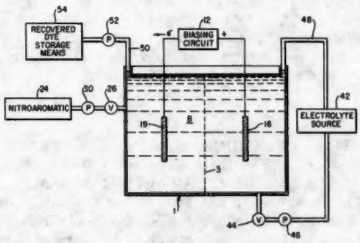
$$R^2SO_2Y \quad \text{(II)}$$

wherein R^2 is as defined above, and Y is a hydrogen atom, alkali metal atom, alkaline earth metal atom or quaternary ammonium are subjected to an electrolytic reaction in a mixture of water and an organic solvent in the presence of a halogen salt.

4,609,439
MEANS AND METHOD FOR THE ELECTROCHEMICAL REDUCTION OF A NITROAROMATIC TO PROVIDE A DYE

Ronald L. Cook, Aurora, Ill., assignor to Texaco Inc., White Plains, N.Y.

Filed Oct. 7, 1985, Ser. No. 784,296
Int. Cl.[4] C25B *3/00*
U.S. Cl. 204—74 **38 Claims**



1. Apparatus for the electrochemical reduction of a nitroaromatic to provide a dye comprising:

housing means for containing an electrolyte solution including dimethylformamide with a supporting electrolyte,

means for dividing the housing means into two sections while permitting the ions to move between the two sections,

means for providing a nitroaromatic to one section of housing means,

a cathode located in the section of the housing means receiving the nitroaromatic,

an anode located in the section of the housing not receiving the nitroaromatic,

means for providing a direct current voltage to the cathode to the anode, to cooperate in a reaction between the nitroaromatic in the electrolyte solution to provide a dye, and

means for removing the dye from the housing means.

4,609,440
ELECTROCHEMICAL SYNTHESIS OF METHANE

Karl W. Frese, Jr., Cupertino; Steven C. Leach, Menlo Park, and David P. Summers, San Francisco, all of Calif., assignors to Gas Research Institute, Chicago, Ill.

Filed Dec. 18, 1985, Ser. No. 811,017
Int. Cl.[4] C25B *3/00*
U.S. Cl. 204—76 **4 Claims**

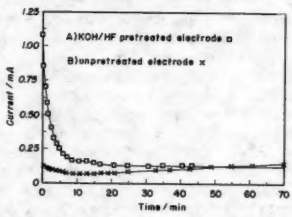
1. A method for electrochemically reducing carbon dioxide to form methane, comprising:

electrolyzing an aqueous solution containing carbon dioxide utilizing a cathode which comprises ruthenium to produce methane.

4,609,441
ELECTROCHEMICAL REDUCTION OF AQUEOUS CARBON DIOXIDE TO METHANOL

Karl W. Frese, Jr., Cupertino; Steven C. Leach, Menlo Park, and David P. Summers, San Francisco, all of Calif., assignors to Gas Research Institute, Chicago, Ill.

Filed Dec. 18, 1985, Ser. No. 810,912
Int. Cl.[4] C25B *3/00*
U.S. Cl. 204—77 **3 Claims**



1. A method of producing methanol from carbon dioxide, comprising:

electrolyzing a solution of carbon dioxide in an aqueous solvent having an electrolyte therein and utilizing a cathode which comprises molybdenum to produce methanol.

4,609,442
ELECTROLYSIS OF HALIDE-CONTAINING SOLUTIONS WITH AMORPHOUS METAL ALLOYS

Michael A. Tenhover; Richard S. Henderson, both of Solon; Jonathan H. Harris, Shaker Heights; Robert K. Grasselli, Aurora, all of Ohio, and Michael D. Ward, Newark, Del., assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jun. 24, 1985, Ser. No. 748,023
Int. Cl.[4] C25B *1/24*
U.S. Cl. 204—95 **19 Claims**

1. A process for the generation of halogens from halide-containing solutions comprising the step of:

conducting electrolysis of said solutions in an electrolytic cell having an amorphous metal alloy anode having the formula

$$M^1{}_aM^2{}_bM^3{}_c$$

where

M^1 is Fe, Co, Ni, Pd and combinations thereof;

M^2 is Ti, Zr, Hf, V, Nb, Ta and combinations thereof;

M^3 is Rh, Os, Ir, Pt and combinations thereof;

a ranges from about 0 to 60;

b ranges from 10 to 70; and

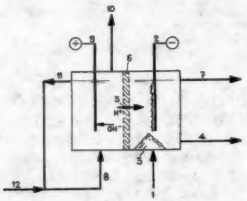
c ranges from about 5 to 70, with the proviso that $a+b+c=100$.

4,609,443

PROCEDURE FOR THE CATHODIC ELECTROWINNING OF METALS, WITH THE CORRESPONDING ACID GENERATION, FROM ITS SALT SOLUTION

Eduardo D. Nogueira, Avda. del Mediterraneo 47, Madrid, Spain

Filed Jul. 1, 1985, Ser. No. 751,330
Claims priority, application Spain, Jul. 2, 1984, 533.927
Int. Cl.[4] C25B *1/22*
U.S. Cl. 204—104 **8 Claims**



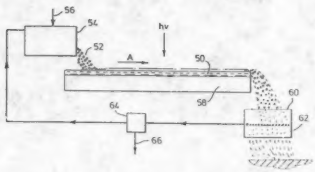
1. Process for the cathodic electrowinning of metals, with corresponding acid generation, comprising the use of an electrochemical cell having anodic and cathodic compartments physically separated by a cation permo-selective membrane, in such a way that different electrolytes are used in each electrodic space, the cathode receiving a solution of the corresponding metallic salt, the metal being discharged at the cathode, and the electrical equilibrium being maintained by protons coming from the anolyte, across the cation permo-selective membrane, there being a change in the catholyte composition from a neutral salt solution into an acidic solution, where the acid and the salt have the same anion; the anode functioning with a different electrolyte comprising a solution of inorganic oxygenated acid, where the applied current discharges oxygen at the anode, thus originating an excess of protons that pass toward the catholyte across the membrane.

4,609,444

PHOTOCHEMICAL REACTIONS FOR COMMERCIAL SYNTHESIS

James E. Guillet, Don Mills, Canada, assignor to Solarchem Corporation, Willowdale, Canada

Continuation-in-part of Ser. No. 442,181, Nov. 16, 1982, Pat. No. 4,525,255. This application Jun. 24, 1985, Ser. No. 748,204
Int. Cl.[4] B01J *19/12*
U.S. Cl. 204—157.6 **16 Claims**



1. A process for converting at least one photochemically reactive chemical reactant to photochemical reaction products utilizing radiation of wavelength from about 100 to about 750 nm, which comprises:

providing a carrier which is substantially inert to the chemical reactant and the photochemical reaction products;

applying said at least one reactant to the carrier and supporting it thereon or therein;

floating said carrier supporting said at least one reactant on a liquid medium in which the carrier is substantially insoluble and inert;

covering the carrier while floating on the medium with a film of substantially gas impermeable, solar radiation permeable material and by exposing the covered carrier-supported reactant or reactants to radiation of wavelength from about 100 to about 750 nm while the carrier floats on the liquid medium; and

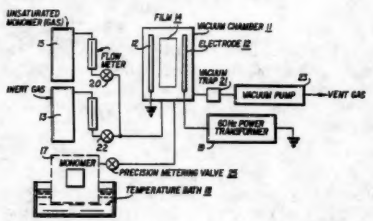
recovering from the inert carrier photochemical reaction products obtained from said reactant or reactants.

4,609,445

METHOD OF PLASMA TREATING A POLYMER FILM TO CHANGE ITS PROPERTIES

Gregory P. Collins, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 566,724, Dec. 29, 1983, Pat. No. 4,436,271. This application Jun. 5, 1985, Ser. No. 741,495
Int. Cl.[4] C07C *3/24*
U.S. Cl. 204—165 **6 Claims**



1. A method of cross-linking surface molecules in a polymer film comprising the steps of:

placing said film in a vacuum chamber containing a pair of electrodes;

filling said chamber with a treatment gas under a pressure of 0.2–0.7 Torr;

applying a voltage to said electrodes to initiate a discharge in and ionization of said treatment gas; and

exposing said film to said ionized treatment gas for a predetermined period of time, thereby cross-linking polymer molecules in a surface layer of said film.

4,609,446

WATER-DISPERSIBLE BINDING AGENTS FOR CATIONIC ELECTRODEPOSITABLE COATINGS AND METHOD FOR MANUFACTURING SAME

Michael Geist, Rubensstr. 251, 4400 Münster; Günther Ott, von Holte Str. 101a, 4400 Münster-Wolbeck, and Georg Schön, Schillerstr. 2, 4416 Everswinkel, all of Fed. Rep. of Germany

Filed Jan. 6, 1984, Ser. No. 568,626
Claims priority, application Fed. Rep. of Germany, Jan. 10, 1983, 3300583
Int. Cl.[4] C08G *59/14*; C08L *63/00*; C25D *13/00*; C09D *5/44*
U.S. Cl. 204—181.7 **16 Claims**

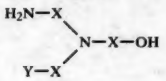
1. A water-dispersible binding agent for cationic electrodepositable coatings derived from modified epoxy resins, which comprise the reaction product of:

(A) a polyepoxy resin with a molecular weight of at least 350,

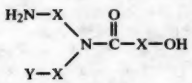
(B) at least one chain lengthening agent selected from the group consisting of a polyfunctional alcohol, polyfunctional carboxylic acid and a polyfunctional SH-compound with a molecular weight of about 300 to 5000 and

(C) an amino alcohol with at least one protected primary or

tertiary nitrogen atom selected from the group having the general formula:



and



wherein X is a branched, linear, unsaturated or cycloaliphatic alkylene, or arylene group, and Y is an amino group or hydrogen.

4,609,447

METHOD OF DETECTING ALKALI METAL IONS

Lawrence K. White, W. Windsor Township, Mercer County, and Jen-shen Maa, Plainsboro Township, Mercer County, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jan. 22, 1985, Ser. No. 693,353
Int. Cl.[4] H01L *21/306*
U.S. Cl. 204—192 E **7 Claims**

1. A method of determining the presence of alkali metal ions in a substrate consisting of silicon or silicon doped with a p-type conductivity modifier which comprises:

(a) providing one or more reference substrates of the same material as said substrate and having a known alkali metal ion concentration;

(b) plasma etching said substrates in a plasma comprising tetrafluoromethane and oxygen; and

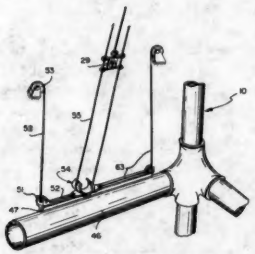
(c) comparing the etch rates of said substrates.

4,609,448

CATHODIC PROTECTION MONITOR SYSTEM FOR SUBMERGED STRUCTURES

Gregory K. Robbins, Mandeveille, La., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 24, 1984, Ser. No. 685,645
Int. Cl.[4] C23F *13/00*; G01N *27/30*
U.S. Cl. 204—197 **3 Claims**



1. Cathodic protection monitor system for a partially submerged, elongated offshore structure **10** which includes; one or more support legs, a base member adjacent to the ocean floor, a plurality of anodes spaced vertically along the submerged portion of said structure, which afford cathodic protection to the structure, and monitoring means operable to vertically scan the structure whereby to ascertain the efficiency of said anodes in affording cathodic protection to the structure's metallic parts, which monitor system includes;

a terminal member at the structure's upper end,

a turning spool depending from said base member and adapted to be moved longitudinally along the latter,

a guide cable having opposed ends connected to the terminal member and engaging the turning spool to define a pair of substantially parallel cable segments, which extend between the terminal member and the turning spool,

a carriage slidably mounted to the parallel cable guide segments and carrying cathodic protection monitor means thereon, and

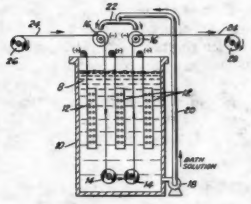
take-up means on said terminal member connected to said carriage **29** and being adjustable to regulate the vertical position of said carriage along said guide cable.

4,609,449

APPARATUS FOR THE PRODUCTION OF CONTINUOUS YARNS OR TOWS COMPRISING HIGH STRENGTH METAL COATED FIBERS

Louis G. Morin, Tarrytown, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 541,611, Oct. 13, 1983, which is a continuation of Ser. No. 358,637, Mar. 16, 1982, abandoned. This application Feb. 28, 1984, Ser. No. 584,483
Int. Cl.[4] C25D *17/00*
U.S. Cl. 204—206 **36 Claims**



1. Apparatus for the production of continuous yarns or tows of high strength composite fibers, comprising:

(a) a container for containing a bath adapted to electrolytically deposit at least one metal,

(b) means for conveying a plurality of electrically conductive core fibers to said container and for continuously immersing at least a portion of the length of said fibers in the bath for electrolytically depositing at least one metal thereon,

(c) means for applying an external voltage high enough to provide energy sufficient to drive the ions of said metal through any boundary layer existing on the surface of said fibers, for a time sufficient to produce a thin uniform, firmly adherent, layer of electrolytically deposited metal on said fibers in the bath, and

(d) means for maintaining the yarns or tows cool enough outside the bath to prevent degradation of said fibers.

4,609,450

COMBINED ELECTROLYTIC-ABRASIVE POLISHING APPARATUS

Kouichi Seimiya, Sakura, and Kenji Nakagami, Ayase, both of Japan, assignors to Agency of Industrial Science and Technology, Tokyo and Nakagami Kogyo Kabushiki Kaisha, Ayase, both of, Japan

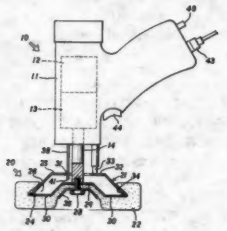
Filed Mar. 26, 1985, Ser. No. 716,239
Int. Cl.[4] C25F *3/14*; C25D *17/12*
U.S. Cl. 204—217 **8 Claims**

1. An apparatus for achieving mirror finishing by means of combined electrolytic-abrasive polishing, comprising:

a liquid-permeable visco-elastic polishing member defining a work face holding abrasive grains and being deformable in conformance with the surface contour of the workpiece;

a rotary drive, including a spindle, for rotating said polishing member;

a conductive tool base having a surface to which said polishing member is attached and comprising a disk-shaped front plate attached to the tip of said spindle and a rear plate, said front and rear plates together forming an electrolyte pool on a side of said front plate opposite said polishing member, the front and rear plates being integrally joined on the periphery thereof, the rear plate



having an electrolyte supply opening provided around the spindle at the center thereof, said polishing member and conductive tool base together forming a tool electrode;

an electrolyte supply pipe having an open end inserted in said electrolyte supply opening;

a plurality of electrolyte outlets provided in said front plate at positions radially inward from said periphery thereof, and

means for supplying an electrolyzing current between the tool electrode and the workpiece.

4,609,451

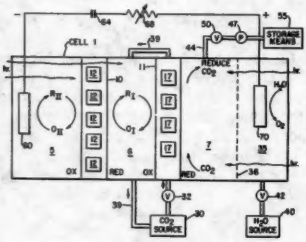
MEANS FOR REDUCING CARBON DIOXIDE TO PROVIDE A PRODUCT

Anthony F. Sammells, and Peter G. Pa Ang, both of Naperville, Ill., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 593,221, Mar. 27, 1984, Pat. No. 4,523,981. This application Mar. 18, 1985, Ser. No. 713,212

Int. Cl.[4] C25B *3/04, 13/08*

U.S. Cl. 204—265 **8 Claims**



1. Apparatus for reducing carbon dioxide to provide at least one product comprises:

means for containing a first redox coupled electrolyte solution,

means for containing a second redox coupled electrolyte solution,

first means responsive to illumination for transferring electrons from the first electrolyte solution to the second electrolyte solution,

means for containing water,

means for providing carbon dioxide,

means for providing hydrogen ions from the water, and

reduction means connected to the carbon dioxide means and responsive to illumination for reducing the carbon dioxide in the presence of transferred electrons from the second redox coupled electrolyte solution and hydrogen ions.

4,609,452

ENGINE AIR/FUEL RATIO SENSING DEVICE

Setsuhiro Shimomura, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

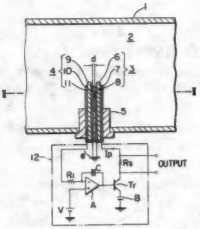
Filed Feb. 4, 1985, Ser. No. 698,016

Claims priority, application Japan, Feb. 8, 1984, 59-23222

The portion of the term of this patent subsequent to Sep. 2, 2003, has been disclaimed.

Int. Cl.[4] G01N *27/46*

U.S. Cl. 204—425 **11 Claims**



1. An air/fuel ratio sensing device for an engine comprising an air/fuel sensor means having a gap portion for introducing an exhaust gas of said engine, a solid electrolyte oxygen pump cell for controlling an oxygen partial pressure within said gap portion, and a solid electrolyte oxygen sensor cell for producing an electromotive force corresponding to the difference between the oxygen partial pressure in the exhaust gas within said gap portion and the oxygen partial pressure in the exhaust gas outside said gap portion; and a control circuit means, coupled to said sensor means, having a current amplifier means for supplying to said oxygen pump cell a pump current necessary for keeping said oxygen partial pressure at a predetermined value, and a resistor (Rs) inserted in the electrical path through which said pump current flows for limiting said pump current to a predetermined value, said control circuit means further comprising:

a voltage measuring means, connected to said resistor, for measuring and providing as outputs therefrom the termnal voltage across said resistor and the terminal voltage across said oxygen pump cell,

a computing means connected to said voltage measuring means, for calculating from said terminal voltage across said resistor and the resistance of said resistor a first value (Ip) corresponding to said pump current and for calculating from said first value and the terminal voltage across said oxygen pump cell a second value (R) corresponding to the internal resistance of said oxygen pump cell,

a temperature converting means, connected to said computing means, for producing a third value (T) corresponding to the temperature of said oxygen pump cell in accordance with a predetermined relationship including said second value as an input parameter, and

a calibrating means, connected to said computing means and said temperature converting means, for providing as an air/fuel signal therefrom a fourth value (Ipo) obtained by calibrating said first value in accordance with a predetermined relationship including said first value and said third value as a parameter.

4,609,453

ENGINE AIR/FUEL RATIO SENSING DEVICE

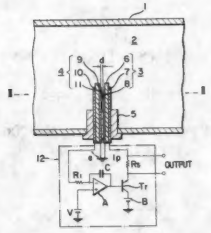
Setsuhiro Shimomura, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 4, 1985, Ser. No. 697,904

Claims priority, application Japan, Feb. 8, 1984, 58-23223

Int. Cl.[4] G01N *27/46*

U.S. Cl. 204—425 **8 Claims**



1. An air/fuel ratio sensing device for an engine comprising an air/fuel sensor means having a gap portion for introducing an exhaust gas of said engine, a solid electrolyte oxygen pump cell for controlling an oxygen partial pressure within said gap portion, and a solid electrolyte oxygen sensor cell for producing an electromotive force corresponding to the difference between the oxygen partial pressure in the exhaust gas within said gap portion and the oxygen partial pressure in the exhaust gas outside said gap portion; and a control circuit means, coupled to said sensor means, having a current amplifier means for supplying to said oxygen pump cell a pump current necessary for keeping said oxygen partial pressure at a predetermined value, and a resistor (Rs) inserted in the electrical path through which said pump current flows for limiting said pump current to a predetermined value, said control circuit means further comprising:

a voltage measuring means, connected to said resistor, for measuring and providing as outputs therefrom the terminal voltage across said resistor and the terminal voltage across said oxygen pump cell,

a computing means, connected to said voltage measuring means, for calculating from said terminal voltage across said resistor and the resistance of said resistor a first value (Ip) corresponding to said pump current and for calculating from said first value and the terminal voltage across said oxygen pump cell a second value (R) corresponding to the internal resistance of said oxygen pump cell, and

a calibrating means, connected to said computing means, for providing as an air/fuel signal therefrom a third value (Ipo) obtained by calibrating said first value in accordance with a predetermined relationship including said first value and said second value as a parameter.

4,609,454

OXYGEN MEASURING SENSOR

Bodo Ziegler, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 7, 1985, Ser. No. 731,466

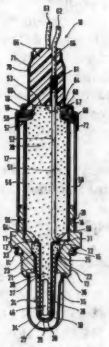
Claims priority, application Fed. Rep. of Germany, May 16, 1984, 3418142

Int. Cl.[4] G01N *27/46*

U.S. Cl. 204—427 **5 Claims**

1. Oxygen-measuring sensor having a metal casing adapted for pass-through fastening of the sensor in the wall of a duct carrying hot gas, the interior of said casing having the configuration of a stepped central bore, an at least partly tubular ceramic structure held fixed and gas-tight therein, said ceramic structure having at least a first part thereof of material capable of conducting oxygen ions, which is covered on its external surface by a porous layer-shaped electrode, has on its interior surface a layer-shaped counter-electrode and surrounds an electrical heating device located in the interior space enclosed by said first part of said ceramic structure, said first structure part having a first end nearer and a second end more remote from hot gas flow when said sensor is fastened in a duct wall and having at said second end layer-shaped contact pads in contact with connection conductors which extend away from said hot gas flow to connections with externally continuing conductors in a path determined by an electrical insulation member forming a second part of said ceramic structure, said sensor further having the improvement comprising:

a ceramic heating element carrier (**39,39'**) constituting part of said heating device made as an axial extension of said electrical insulation member (**38, 38'**) which is of smaller diameter than said electrical insulating member, protrude into said interior space of said first ceramic structure part made of oxygen-ion-conducting material and has a blind bore (**46,46'**) running axially of the sensor, from the end of



said carrier (**39,39'**) nearer said gas flow in the direction of said electric insulation member (**38,38'**);

elongate electrical conductor means (**48**) in a path determined by said electric insulation member (**38,38'**) for connection to a heating element located on said carrier of said heating device;

electrical contact pads on said electric insulation member electrically connected with said elongate electrical conductor means;

a solid electrolyte tube (**26, 26'**) constituting said oxygen-ion-conducting-material first part of said ceramic structure, having a tubular portion surrounding laterally said heating element carrier (**39, 39'**) and a tip portion extending beyond said end of said carrier and being held against said electric insulation member (**38,38'**) in said casing (**11, 11'**) and positioned firmly with respect to said electric insulation by interfitting indexing configurations of said tube and said member.

4,609,455

COAL LIQUEFACTION WITH PREASPHALTENE RECYCLE

Robert F. Weimer, and Robert N. Miller, both of Allentown, Pa., assignors to International Coal Refining Company, Allentown, Pa.

Continuation-in-part of Ser. No. 543,201, Oct. 19, 1983, abandoned. This application Feb. 21, 1985, Ser. No. 703,858

Int. Cl.[4] C10G *1/00, 17/04, 21/02, 21/12*

U.S. Cl. 208—412 **8 Claims**

1. A process for solvent refining coal to yield an asphaltene-rich product stream by forming a slurry of finely divided coal and a process solvent therefor, which process comprises the steps of:

(1) contacting said slurry with a hydrogen-rich gas;

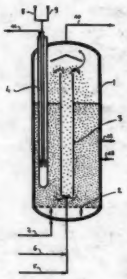
(2) heating said slurry in the presence of said hydrogen-rich gas;
(3) permitting said heated slurry to react and to dissolve at least some of said coal;
(4) adding fresh hydrogen as required to form a liquefied coal slurry;
(5) passing said liquefield coal slurry to a separator in which a vapor product stream and a condensed product stream are separated;
(6) passing the condensed product stream to a vacuum distillation still;
(7) removing from the vacuum distillation still a residual bottoms product, wherein said residual bottoms product from said still is mixed with a suitable extraction solvent and is passed to a supercritical extraction system to separate an asphaltene-rich stream comprised of pentane solubles and benzene solubles from a preasphaltene-rich stream which includes solid residue material, said preasphaltene-rich stream comprised of benzene insolubles, pyridine solubles, pyridine insolubles and ash;
(8) recycling at least a portion of said preasphaltene-rich stream together with said solid residue material as process solvent, with less than 10 percent of said process solvent comprising asphaltenes;
(9) withdrawing said asphaltene-rich stream and passing said asphaltene-rich stream to a solvent recovery system to yield an asphaltene-rich product stream and an extraction solvent stream;
(10) recovering and recycling said extraction solvent stream from step (9) to said vacuum distillation still in step (6); and
(11) recovering said asphaltene-rich stream from said solvent recovery system as said product stream.

4,609,456

PROCESS FOR CONVERTING HEAVY PETROLEUM RESIDUES TO HYDROGEN AND GASEOUS DISTILLABLE HYDROCARBONS

André Deschamps, Noisy le Roi; Claude Dezael, Maisons Laffitte, and Sigismond Franckowiak, Rueil-Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Feb. 8, 1985, Ser. No. 699,540
Claims priority, application France, Feb. 10, 1984, 84 02193
Int. Cl.[4] C10G *47/04*; B01J *23/90*; C10J *3/46*
U.S. Cl. 208—112 **13 Claims**



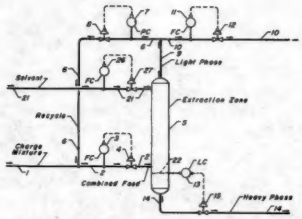
1. An integrated process for converting heavy petroleum residues to hydrogen and to gaseous and distillable hydrocarbons, comprising:
(a) a first step wherein the petroleum residue and hydrogen are simultaneously contacted, for about 0.1–60 seconds with a supported catalyst containing at least one oxide or carbonate of alkali or alkaline-earth metal, obtained in step (b), at a temperature of 530°–800° C., under a pressure of 15–100 bars, to produce hydrocarbons gases and vapors, and coke which deposits on the catalyst, the coked catalyst being separated from said hydrocarbons,
(b) a second step wherein the coked catalyst, separated from hydrocarbons in step (a), is contacted with steam, substantially in the absence of molecular oxygen, at a temperature of 600°–800° C., under a pressure of 15–100 bars, for a sufficient time to gasify at least 90% of the deposited coke, to hydrogen, carbon monoxide, carbon dioxide and methane, said catalyst being recycled to step (a).

4,609,457

OPERATION OF CONTINUOUS EXTRACTION PROCESS

James W. Kilroy, Arcadia, Tex., assignor to UOP Inc., Des Plaines, Ill.

Filed Feb. 27, 1985, Ser. No. 706,539
Int. Cl.[4] C10G *21/02*
U.S. Cl. 208—311 **20 Claims**



1. A method of operation for a continuous countercurrent extraction zone, to which a charge mixture stream and a solvent stream are continuously supplied and from which an extract stream and a raffinate stream are continuously withdrawn, said method of operation comprising:
(a) passing a charge mixture stream into an extraction zone at a rate of flow subject to variation as described in step (h);
(b) controlling the rate at which a solvent stream is supplied to said extraction zone at a previously established constant value;
(c) establishing an interface at a previously determined location in the extraction zone between a heavy phase which occupies a lower portion of the extraction zone and a light phase which occupies an upper portion of the extraction zone;
(d) varying the rate at which a stream of said heavy phase is withdrawn from said extraction zone lower portion in order to maintain said interface at a previously determined location;
(e) withdrawing a stream of said light phase from said extraction zone upper portion and dividing said light phase stream into first and second portions;
(f) establishing a recycle stream which consists of said first portion of said light phase stream and continuously supplying said recycle stream to the extraction zone at substantially the same location at which the charge mixture stream is supplied;
(g) varying the rate of flow of said recycle stream in order to maintain volumetric inventory of the extraction zone at a constant value;
(h) maintaining a combined rate of flow into the extraction zone at a previously determined constant value, which combined rate of flow consists of the sum of the flow rates of said recycle stream and said charge mixture stream, thereby causing said charge mixture stream flow rate to vary inversely with said recycle stream flow rate; and,
(i) controlling the rate of flow of said second portion of said light phase stream, which remains after establishment of the recycle stream, at a previously determined constant value.

4,609,458

DEVICE FOR REMOVING MOISTURE FROM OIL

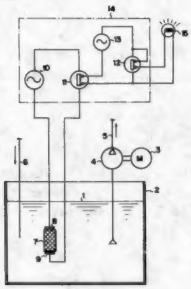
Itsuji Okamura, Toyota; Hiroaki Matushita, Chiba, and Kiyoshi Murata, Seto, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha; Mac Incorporated and Okaya and Co., Ltd., all of, Japan

Filed Aug. 29, 1984, Ser. No. 645,267

Claims priority, application Japan, Aug. 31, 1983, 58-161071

Int. Cl.[4] B01D *15/00*

U.S. Cl. 210—85 **4 Claims**



1. A device for removing moisture from oil comprising a circulation line that supplies oil to machinery,

a moisture-adsorbing porous ceramic material positioned in the circulation line, the fine pores of the ceramic material being smaller than the molecules of said oil so that the oil molecules do not enter the pores, but being about the same diameter as water molecules and thus capable of trapping water molecules such that the porous ceramic material adsorbs moisture dissolved in said oil and its electrical resistance lowers in accordance with the amount of moisture adsorbed thereby, and

a sensor electrically connected to said moisture-adsorbing ceramic material that outputs a signal when the electrical resistance of said moisture-adsorbing ceramic material falls below a given preset value.

4,609,459

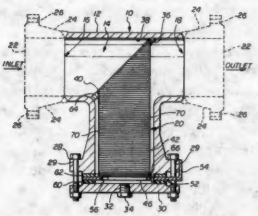
FITTED FILTER MEMBER

Junior F. Hendrix, Houston, Tex., assignor to Hendrix Steel & Fabricating Co. Inc., Houston, Tex.

Continuation of Ser. No. 481,480, Apr. 1, 1983, abandoned. This application Feb. 14, 1985, Ser. No. 701,755

Int. Cl.[4] B01D *35/02*

U.S. Cl. 210—91 **2 Claims**



1. In filter apparatus, the combination comprising:

(a) A generally T-shaped member with generally opposed flow inlet and flow outlet ends and a filter housing disposed perpendicular to said inlet and outlet ends which terminates into a connector flange having connection holes defined around the flange;

(b) A baffle plate mounted within said housing at an oblique angle relative to the flow path between said inlet end and said outlet end and defining an elliptical aperture which presents a flow path and a filter path concentric to the inner surface of said filter housing;

(c) A flanged cover plate connected to said connector flange by means of threaded connectors disposed in the holes provided around said flange and around said cover plate;

(d) A generally cylindrical filter means comprising, (1) a filter element fitted within said aperture and having an obliquely truncated first end defining a surface generally parallel to the plane of said baffle plate, and (2) a filter base plate forming a second end of said filter element and sized to be compressedly engaged between said flange and said cover plate;

(e) Said base plate having a flat portion extending outwardly to the periphery of said flange and then turned up to conform with the outside edge of said flange and fitted between two peripheral alignment means formed on the outside cylindrical face of said flange;

(f) Said flat portion defining a hole to receive one of said threaded connectors as located in a selected hole in said flange to rotationally orient said filter element with said baffle plate; and

(g) Said turned up portion being designed to display visual information.

4,609,460

ANAEROBIC PURIFICATION EQUIPMENT FOR WASTE WATER

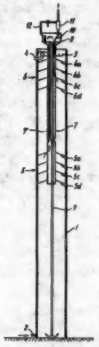
Sjoerd H. J. Vellinga, Wommels, Netherlands, assignor to Paques B.V., Balk, Netherlands

Filed Jul. 23, 1985, Ser. No. 757,936

Claims priority, application Netherlands, Jul. 24, 1984, 8402337

Int. Cl.[4] C02F *11/04;* **C12P** *5/02*

U.S. Cl. 210—188 **10 Claims**



1. Anaerobic purification apparatus for treatment of waste water by fermentation in contact with sludge to produce gas and purified water, comprising:

apparatus comprising at least one reactor tube for fermentation, means for introducing influent into said at least one reactor tube, means for collecting and discharging purified water near the uppermost end of the at least one reactor tube, a first collecting system for removing gas from water being positioned at a small distance under the level of said means for collecting and discharging purified water, a second collecting system for collecting a gas-water-sludge mixture and passing water, said second collecting system being positioned at a considerable distance vertically under the level of said means for collecting and discharging purified water, both collecting systems ex-

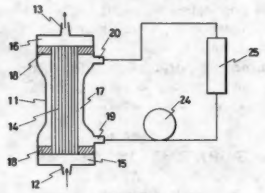
tending substantially across the entire cross-section of the reactor tube, at least one rising pipe for raising the gas-water-sludge mixture by gas lifting action, said rising pipe being in connection with said second collecting system, a separation device for separating gas and water in connection with said rising pipe at the upper end of said pipe, and at least one downpipe extending from said separation device to the lowermost part of the reactor tube for returning the separated water and sludge.

4,609,461

APPARATUS FOR PURIFYING BLOOD

Satoshi Takata, Kobe, and Nobutaka Tani, Minoo, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 6, 1984, Ser. No. 638,084
Claims priority, application Japan, Aug. 8, 1983, 58-145590
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—195.2 **2 Claims**



1. An apparatus for the purification of whole blood comprising:

(a) a chamber having an inlet at one end therof, an impure blood room formed in said chamber adjacent to said inlet and being separated from the remainder of said chamber by a first separation means, an outlet at the end of said chamber opposite from said inlet, a purified blood room formed in said chamber adjacent to said outlet and separated from the remainder of the chamber by a second separating means, a plurality of semi-permeable hollow fibers provided in said chamber and attached at their respective ends to the first separating means and the second separating means, a central reservoir formed in said chamber between said first and second separating means and around said hollow fiber membranes, said reservoir having a inlet adjacent to said purified blood room and an outlet adjacent to said impure blood room and allowing plasma to flow therein; and

(b) a plasma treatment path consisting of a pump connected to said outlet of said plasma reservoir, a plasma purifying means connected to the outlet of said pump and means for connecting the output of said purifying means to the inlet of said plasma reservoir; and

wherein said hollow fibers are capable of separating plasma from whole blood and having pores at the inside surface thereof of 0.01 to 10 μm in diameter and a permeation rate for pure water of not less than 2 $ml/m^2.min.mmHg$.

4,609,462

METHOD AND APPARATUS TO CONVERT TOP TUBE SHEET FILTER TO BOTTOM TUBE SHEET FILTER

George C. Flynn, Chester, N.J., assignor to The Graver Company, Union, N.J.

Filed Jan. 23, 1985, Ser. No. 695,041
Int. Cl.[4] B01D *27/08*
U.S. Cl. 210—232 **25 Claims**

1. A method of converting a top tube sheet precoat filter apparatus into a bottom tube sheet precoat filter apparatus, comprising the steps of:

(a) providing a top tube sheet precoat filter apparatus having,

(i) a filter tank having an upper effluent compartment and a lower influent compartment,

(ii) a tube sheet mounted in said filter tank dividing the filter tank into the upper and lower compartments,

(iii) filter elements extending downwardly from the tube sheet into the influent compartment in fluid communication with corresponding openings in the tube sheet,

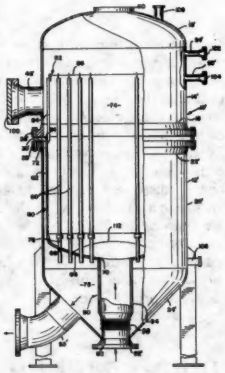
(iv) an inlet conduit for directing influent liquid into the lower influent compartment, and

(v) an effluent conduit for withdrawing effluent liquid from the upper effluent compartment;

(b) removing the tube sheet and the filter elements from the filter tank;

(c) supporting a cannister member, having an open upper end and a closed lower end, within the filter tank such that the upper end thereof is in sealing contact with the inner surface of the filter tank and the lower end thereof extends substantially across the filter tank and functions as a tube sheet dividing the filter tank into an upper influent compartment and a lower effluent compartment;

(d) supporting precoat filter elements upwarding from the lower end of the cannister member within the upper influent compartment in fluid communication with openings in the lower end of the cannister member;



(e) providing an influent conduit for directing influent liquid into the upper influent compartment; and

(f) providing an effluent conduit for withdrawing effluent liquid from the lower effluent compartment.

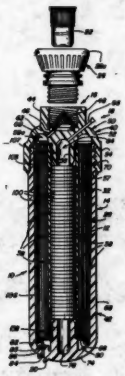
14. A bottom tube sheet precoat filter apparatus, comprising: a generally vertical filter tank having an upper section and a lower section, said upper and lower sections being secured to each other through a substantially horizontal plane intermediate the upper and lower ends of said filter tank; a generally vertical cannister member supported within said filter tank, said cannister member having an open upper end in sealing contact with said filter tank and a closed lower end having openings formed therein so as to divide said filter tank into an upper influent compartment and a lower effluent compartment; a plurality of precoat filter elements extending upwardly from the lower end of said cannister member into said upper influent compartment in fluid communication with said openings in said lower end of said cannister member; an influent conduit for directing influent liquid into said upper influent compartment; and an effluent conduit for withdrawing effluent liquid from said lower effluent compartment.

4,609,463

WATER PURIFICATION DEVICE

Clement C. Macevicz, San Diego, and Byron J. Mulherin, Jr., San Marcos, both of Calif., assignors to Nimbus Water Systems, Inc., Escondido, Calif.

Filed Nov. 30, 1984, Ser. No. 676,983
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—238 6 Claims



1. A water purification device for separating water from dissolved impurities therein, comprising:

a two-piece pressure vessel;

a reverse-osmosis module disposed within said pressure vessel, said reverse-osmosis module comprising a spirally-wrapped membrane assembly disposed on a perforated tubular core;

an inlet fitting on said pressure vessel for enabling flow of unpurified water into said pressure vessel;

first outlet means on said pressure vessel for enabling flow of purified water from said pressure vessel; and

second ontlet means on said pressure vessel for enabling restricted flow of unpurified water and impurities from said pressure vessel;

said pressure vessel comprising an upper member and a lower member, said inlet fitting being disposed on said upper member and including quick-disconnect coupling means thereon to enable releasable connection of said device to a source of water;

each of said upper and lower members having an outer wall;

said upper and lower members having mutually cooperable threads formed on their outer walls to enable said members to be releasably attached to one another;

an inlet plenum being defined above said module for receiving unpurified water from said inlet fitting and a receptacle being defined beneath said module for receiving unpurified water and impurities from said module;

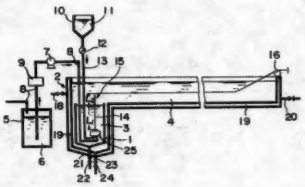
said lower member having a gradually tapered interior, said interior having a larger inner diameter adjacent its upper end than adjacent its lower end, said module being dimensioned so that a lower portion of said module is compressed by, and sealed against, said gradually tapered interior of said lower member between said inlet plenum and said receptacle.

4,609,464

HOLLOW FIBERS FOR USE IN DIALYSIS AND ARTIFICIAL KIDNEY

Juuro Aoyagi; Kazuaki Takahara, both of Tokyo, and Yukio Seita, Fuji, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP84/00050, § 371 Date Oct. 9, 1984, § 102(e) Date Oct. 9, 1984, PCT Pub. No. WO84/03228, PCT Pub. Date Aug. 30, 1984
PCT Filed Feb. 17, 1984, Ser. No. 667,478
Claims priority, application Japan, Feb. 18, 1983, 58-24832
Int. Cl.[4] B01D *31/00*
U.S. Cl. 210—321.3 22 Claims



1. A dialytic hollow fiber of cuprammonium cellulose having a continuously perforated hollow core throughout the entire length thereof, said hollow fiber having a wall thickness of 5 to 35 μm and a truly circular cross section 50 to 500 μm in outside diameter throughout the entire length and the entire circumference thereof, having a skin layer of not more than 300 A in thickness in the outer surface thereof, and containing substantially no void in the inner surface thereof, having a permeation ratio in the range of 20 to 40% for cytochrome C and in the range of not less than 99.9% for creatinine with an average molecular weight of 12,400, and having a maximum fractional molecular weight of about 40,000 at an inhibition ratio of 95%.

4,609,465

FILTER CARTRIDGE WITH A CONNECTOR SEAL

John D. Miller, Homer, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

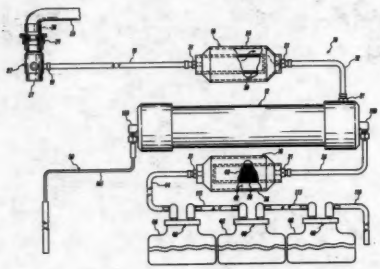
Filed May 21, 1984, Ser. No. 612,424
Int. Cl.[4] B01D *27/08*
U.S. Cl. 210—323.2 17 Claims

1. A filter cartridge for removing particulates from a destructive fluid, said filter cartridge comprising a cylindrical filter arrangement having a generally annular cross section and including a cylindrical microporous fluoropolymeric filter for removing particulate contaminants from fluid flowing through the filter and further including a cylindrical fluoropolymeric structure coaxially disposed adjacent the filter for supporting the filter, first and second impervious fluoropolymeric end caps concentrically disposed adjacent first and second ends, respectively, of the filter arrangement, said first end cap including a cylindrical protrusion projecting away from the filter arrangement and containing means defining a central aperture communicating with the center of the filter arrangement and said second end cap enclosing said second end of said filter arrangement, and a sealing ring cooperatively arranged with the first end cap, at least the external surface of said sealing ring comprising a fluoropolymeric material.

4,609,466
PORTABLE WATER PURIFICATION SYSTEM

Calvin W. McCausland, 165 North, 1300 East, Springville, Utah 84663, and Louis A. Palombo, 622 North, 300 East, Spanish Fork, Utah 84660

Filed Oct. 23, 1984, Ser. No. 663,860
Int. Cl.[4] B01D *41/00*
U.S. Cl. 210—244 16 Claims



1. A portable water purification system usable as a domestic appliance comprising:

means designed for staged purification of raw tap water to a potable pure condition, including:

a plurality of flow connected water filter units arranged for seriatim removal of different inpurities contained in raw water to be purified, said filter units including:

a primary water filter unit having a pressure vessel, means forming a reverse osmosis filter structure in said pressure vessel, a raw water inlet conduit, a pure water outlet conduit and a waste water outlet conduit connected to said pressure vessel, respectively; and

a secondary water filter unit operationally adapted for solids removal;

raw water connector means for detachable connection to a raw water faucet, and flexible raw water conduit means for conducting raw water from said raw water connector means to said filter units;

pure water connector means defining a closed system for connection to a pure water storage container, and flexible pure water conduit means interconnecting said pure water connector means with an outlet from said filter units; and

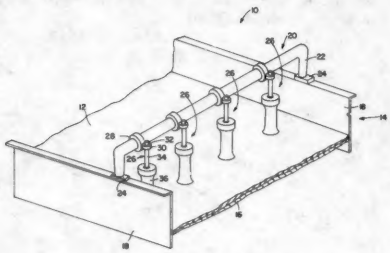
portable storage chest means for containing said filter units, said flexible conduit means and said connector means for storage of said system upon disconnection of said conduit means from said faucet and said storage container, respectively.

4,609,467
ROTARY PLOW ASSEMBLY

Ramon A. Morales, Budd Lake, N.J., assignor to Komline-Sanderson Engineering Corporation, Peapack, N.J.

Filed Aug. 7, 1985, Ser. No. 763,278
Int. Cl.[4] B01D *33/36*
U.S. Cl. 210—396 20 Claims

1. A plow assembly adapted for use with an endless conveyor type filtering device, said assembly comprising an elongated support member and at least one plow depending therefrom, said plow comprising a shaft affixed to said support member, a plow body having a central bore through which the shaft at least partially extends, said body capable of rotary



movement on said shaft, and means for retaining said plow body on said shaft.

4,609,468
INCREASED STRENGTH POLYMER-BLENDED MEMBRANES

Joan A. Cramm, Mount Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

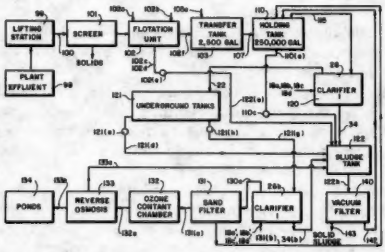
Filed Jun. 1, 1984, Ser. No. 617,053
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—490 18 Claims

1. A supported thin film polymer blend membrane which possesses increased structural strength comprising a porous support having composited thereon an inorganic-organic blend formed as a solution phase blend in a mutually miscible solvent consisting of a phosphoric or sulfuric acid and an organic polymer selected from the group consisting of polyvinyl alcohol, polyvinyl fluoride, polyethylene oxide, polyethylene glycol, and cellulose acetate.

4,609,469
METHOD FOR TREATING PLANT EFFLUENT

Hagop Keoteklian, Santa Maria, Calif., assignor to Entenmanns, Inc., Bayshore, N.Y.

Filed Oct. 22, 1984, Ser. No. 663,112
Int. Cl.[4] C02F *3/28*
U.S. Cl. 210—609 9 Claims



1. A process for providing tertiary treatment to an industrial waste water stream which contains dissolved starches, sugars, gluten, protein and fats comprising the sequential steps of:

(a) treating the waste stream with alum and anionic polyelectrolyte in a flotation unit thereby producing sludge and comparatively clarified water, removing the sludge to a concentration tank and the comparatively clarified water to a transfer tank, admixing the comparatively clarified water with a cationic polyelectrolyte in a holding tank, pumping the thus treated water to a primary clarifier

having sufficient coagulants and flocculants added thereto to produce a sludge, and then collecting and separating the resultant sludge from this primary clarification in order to produce a further clarified effluent;

(b) adding to the further clarified effluent anaerobic activated bacteria in a series of underground tanks;

(c) holding the clarified effluent in (b) at least 48 hours at a temperature of between 28° C. and 48° C. to substantially devour and decompose suspended and dissolved organic wastes therein;

(d) recovering the water effluent from the holding area in (c) and circulating it to a second clarifier operative to produce an additional sludge like that produced in the primary clarifier by means of added coagulants and flocculants;

(e) collecting the additional sludges and separating from them a second clarified water effluent;

(f) passing the sludges from the steps (a) and (e) to a collection sludge tank area for eventual disposal, and

(g) recirculating the second clarified water to a sand gravity filter to further clarify said water.

4,609,470

METHOD OF BIOPOLYMERIC SLUDGE DEWATERING

Koo-Heung Chung, Granger; Gary L. Davis, Argos, and Francis H. Verhoff, Goshen, all of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jul. 8, 1985, Ser. No. 752,824
Int. Cl.⁴ C02F *11/14*
U.S. Cl. 210—725 **12 Claims**

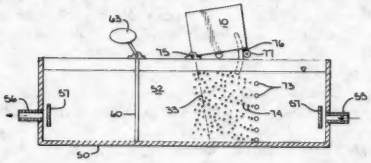
1. A method for dewatering aqueous sludge comprising mixing the sludge with an amount of chitosan effective to flocculate the sludge solids and an amount of an organic dialdehyde effective to substantially strengthen the solid floc and increase the settling rate of the floc.

4,609,471

LASER DISINFECTION OF FLUIDS ENHANCED BY GAS BUBBLES

Bernard J. Beemster, Mequon, and Paul R. Goudy, Jr., Milwaukee, both of Wis., assignors to Autotrol Corporation, Milwaukee, Wis.

Filed Apr. 25, 1984, Ser. No. 603,566
Int. Cl.⁴ C02F *1/32*
U.S. Cl. 210—748 **5 Claims**



1. A method of disinfecting a liquid, comprising:

introducing bubbles of a gas into a stream of liquid to be treated; and

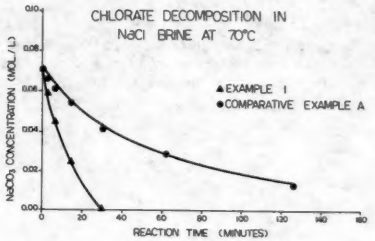
passing the stream of the liquid with the bubbles through a laser beam which radiates coherent light in the ultraviolet range.

4,609,472

PROCESS FOR REMOVAL OF ALKALI METAL CHLORATE FROM ALKALI METAL CHLORIDE BRINES

Don E. Reynolds, Athens, and James D. Kilby, Cleveland, both of Tenn., assignors to Olin Corporation, Cheshire, Conn.

Filed Mar. 29, 1985, Ser. No. 717,768
Int. Cl.⁴ C02F *1/70*
U.S. Cl. 210—750 **8 Claims**



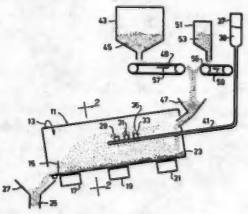
1. A process for removing chlorate ions from an impure alkali Metal chloride brine removed from an electrolytic cell which consists essentially of acidifying said impure brine to a pH of less than about 2 and reacting said acidified impure brine with a reducing portion of hydrazine hydrochloride wherein the molar ratio of hydrazine hydrochloride to chlorate ion is at least about 0.1:1.

4,609,473

BENTONITE-SULFATE FABRIC SOFTENING PARTICULATE AGGLOMERATE, PROCESSES FOR MANUFACTURE AND USE THEREOF, AND DETERGENT COMPOSITIONS CONTAINING IT

Pallassana N. Ramachandran, Robbinsville; Charles J. Schramm, Jr., Somerville, both of N.J.; H. Peter Lazecky, New York, N.Y., and Martin D. Reinish, Emerson, N.J., assignors to Colgate Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 674,899, Nov. 26, 1984. This application Mar. 14, 1985, Ser. No. 711,796
Int. Cl.⁴ D06M *11/00*
U.S. Cl. 252—8.6 **22 Claims**



1. A fabric softening bentonite-sodium sulfate agglomerate which comprises agglomerate particles of sizes in the range of No's. 10 to 140 sieves, U.S. Sieve Series, which are agglomerates of mixtures of finely divided bentonite and sodium sulfate, with at least a major proportion by weight of each of the bentonite and sodium sulfate particles being less than No. 100 sieve size, with the proportions of bentonite and sodium sulfate being within the range of one part of sodium sulfate by weight to 2 to 10 parts of bentonite by weight, with the bentonite and sodium sulfate particles being held together in the agglomerate particles by hydrated bentonite at the surfaces of said particles, and with the agglomerate particles being of a moisture content in the range of 5 to 16%, by weight.

4,609,474

AQUEOUS ORGANIC SULFONATE SURFACTANT SYSTEMS CONTAINING PHENYLETHERSULFONATE COSURFACTANTS

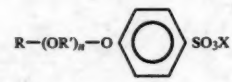
Joseph Reisberg, Houston, Tex.; Hendrik T. Verkouw, Frankfurt am Main, Fed. Rep. of Germany, and Theodorus A. B. M. Bolsman, CM Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 526,725, Aug. 26, 1983, abandoned. This application Dec. 6, 1984, Ser. No. 678,841

Int. Cl.[4] E21B *43/22*

U.S. Cl. 252—8.55 D **4 Claims**

1. An aqueous anionic surfactant system consisting essentially of a petroleum sulfonate surfactant system containing an amount effective for providing salt tolerance of a cosurfactant of the formula.



where R is a 10–18 carbon atom alkyl radical, R′ is an ethylene radical, n is 1–5 and X is a monovalent cation.

4,609,475

METHOD OF IMPROVING THE PERMEABILITY OF A SUBTERRANEAN FORMATION BY REMOVAL OF POLYMERIC MATERIALS THEREFROM

David J. Hanlon; J. Michael Wilson, and Jimmie D. Weaver, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Feb. 24, 1984, Ser. No. 582,994

Int. Cl.[4] E21B *43/25, 43/28*

U.S. Cl. 252—8.55 B **10 Claims**

6. A method for increasing the permeability of a porous media which has its permeability decreased by the deposition of polymeric materials comprising:

contacting the media with an aqueous composition having a pH of from about 2 to about 10 and comprising:

(a) a water soluble carboxylic acid selected from the group consisting of formic acid, acetic acid, propionic acid, butyric acid, lactic acid, glycolic acid, citric acid and mixtures thereof; and,

(b) an oxidizing agent selected from the group consisting of sodium perborate, hydrogen peroxide, an alkali metal peroxide, sodium carbonate peroxydihydrate, sodium peroxydiphosphate, potassium peroxydiphosphate, potassium carbonate peroxydihydrate, and mixtures thereof; and

(c) a source effective in promoting the decomposition of the oxidizing agent and selected from the group consisting of ethyl alcohol, methyl alcohol, propyl alcohol, n-butyl alcohol, isopropyl alcohol, isoamyl alcohol, ethylene glycol, diacetone alcohol, cuprous ions, ferrous ions, cobalt ions, and mixtures thereof.

4,609,476

HIGH TEMPERATURE STABLE AQUEOUS BRINE FLUIDS

Israel J. Heilweil, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 490,901, May 2, 1983, abandoned, and Ser. No. 604,669, Apr. 27, 1984, abandoned. This application Nov. 21, 1984, Ser. No. 673,635

Int. Cl.[4] C09K *7/02*; E21B *43/00*

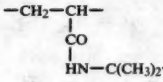
U.S. Cl. 252—8.55 R **42 Claims**

25. An aqueous brine fluid comprising:

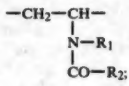
(a) a densifying amount of a densifying salt sufficient to densify said fluid, said densifying salt constituting at least about 30% by weight of said fluid;

(b) a viscosity increasing vinyl sulfonate amide copolymer in an amount from about 3% to about 5% by weight of said fluid, wherein said vinyl sulfonate amide copolymer is a viscosity increasing amount of one or more water-soluble copolymers of acrylamidomethylpropanesulfonic acids salts, consisting essentially of a random distribution of

(1) 5 to 95% by weight of units of the formula

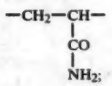


(2) 5 to 95% by weight of units of the formula



and

(3) 0 to 80% by weight of units of the formula



wherein R_1 and R_2 are the same or different and each is hydrogen, methyl or ethyl; and $X^{\oplus}$ is a cation; and

(c) at least one thermal stability enhancing additive selected from the group consisting of N-methyl-2-pyrrolidone, 1-methyl-2-pyridone, N,N′-dimethyl-propylene urea, N-(N,N-dimethyl-amino)-propyl-2-pyrrolidone, N-methyl caprolactam, and hydantoin, wherein said additive constitutes from about 0.1% by weight to about 5% by weight of said fluid.

4,609,477

LIQUID FOAMING ADDITIVES USED IN THE STIMULATION OF OIL AND GAS WELLS

Stefano C. Crema, Wyandotte, Mich., assignor to BASF Corporation, Wyandotte, Mich.

Filed Feb. 5, 1985, Ser. No. 698,349

Int. Cl.[4] E21B *43/26*

U.S. Cl. 252—8.55 **9 Claims**

1. A foaming additive for the stimulation of oil or gas wells comprising:

(a) a nonionic fluorochemical surfactant; and

(b) a nonionic heteric polyether surfactant having a molecular weight of 5,000 to 50,000 prepared by reacting an initiator having at least two active hydrogen atoms with a mixture consisting of of ethylene oxide and a lower epoxide having 3 to 4 carbon atoms such that the weight ratio of ethylene oxide to lower epoxide is from 80:20 to 20:80 wherein components (a) and (b) are used in a weight ratio of 1:5 to 5:1.

6. A process for stimulating oil or gas well formations which comprises injecting an effective amount of a foaming additive comprising

(a) a nonionic fluorochemical surfactant; and

(b) a nonionic heteric polyether surfactant having a molecular weight of 5,000 to 50,000 prepared by reacting an initiator having at least two active hydrogen atoms with a mixture consisting of of ethylene oxide and a lower epoxide having 3 to 4 carbon atoms such that the weight ratio of ethylene oxide to lower epoxide is from 80:20 to 20:80 wherein components (a) and (b) are used in a weight ratio of 1:5 to 5:1

into the oil or gas well formation along with a lower alkyl

alcohol which will foam in the presence of the foaming additive and fracturing said formation.

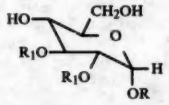
4,609,478

SULFONATED ALKYL GLUCOSIDES AND USE THEREOF IN OIL RECOVERY

Philip A. Egan, Asheville, N.C., assignor to Olin Corporation, Cheshire, Conn.

Filed Feb. 21, 1984, Ser. No. 581,679
Int. Cl.[4] E21B *43/22*; C07H *15/10*
U.S. Cl. 252—8.55 D 5 Claims

1. A sulfonated 1-O substituted glucoside having the formula:



wherein:

(a) R is lower alkyl, phenyl, benzyl or alkoxyphenol;

(b) one or both of said R_1 groups is

$$MO_3S—CH_2—CH=CH-(CH_2)_n$$

wherein M is H, an alkali metal ion or ammonium, and n is an integer from 0 to 18; and

(c) any remaining R_1 group is H.

5. In a method for recovering petroleum from a subterranean, petroleum containing, porous formation penetrated by at least one injection well and at least one production well, said recovery method comprising the type wherein at least one fluid is injected into the formation and petroleum displaced by the injected at least one fluid is recovered from the formation through the production well, the improvement wherein at least one fluid injected into said formation is a sulfonated glucoside derivative according to claim 1.

4,609,479

ORGANIC TITANIUM COMPOSITIONS AND THEIR USE AS CROSS-LINKERS

Kenneth C. Smeltz, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 9, 1984, Ser. No. 658,507
Int. Cl.[4] E21B *43/26*
U.S. Cl. 252—8.551 45 Claims

1. A process which comprises combining a polyol selected from the group consisting of glycerol, erythritol, arabitol, xylitol, sorbitol, dulcitol, mannitol, inositol, monosaccharides, and disaccharides, water and an α-hydroxy carboxylic acid selected from the group consisting of lactic acid, glycolic acid, malic acid, citric acid, tartaric acid, saccharic acid, gluconic acid, glyceric acid and mandelic acid, and then reacting that combination of materials with a tetravalent titanium compound of an inorganic acid at an α-hydroxy carboxylic acid:titanium mol ratio between about 1:1 and aout 3:1 and a polyol:titanium mol ratio between about 0.25:1 and about 2:1.

4,609,480

LUBRICANT COMPOSITION FOR IMPROVING FATIGUE LIFE

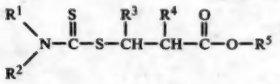
Hitoshi Hata; Akira Sasaki, and Hisao Yamada, all of Ichihara, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Continuation of Ser. No. 648,974, Sep. 10, 1984, abandoned. This application Jul. 31, 1985, Ser. No. 761,652
Claims priority, application Japan, Sep. 19, 1983, 58-171182
Int. Cl.[4] C10M *105/8, 105/72*
U.S. Cl. 252—32.7 E 14 Claims

1. A lubricant composition for improving fatigue life which comprises a lubricating base material containing the additives

(a) from 0.01 to 10% by weight of at least one compound selected from the group consisting of

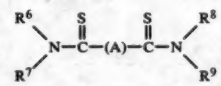
(i) a dithiocarbamic acid ester of the formula



(I)

wherein R^1, R^2 and R^5 are each an alkyl group having from 1 to 18 carbon atoms, R^3 is a hydrogen atom or an ester group of the formula —$COOR^5$ and R^4 is a hydrogen atom or methyl group;

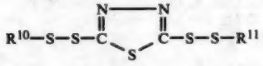
(ii) an alkyl thiocarbamoyl compound of the formula



(II)

wherein R^6, R^7, R^8 and R^9 are each an alkyl group having from 1 to 20 carbon atoms, each of the pairs of R^6 and R^7, and R^8 and R^9 may form a ring structure with the nitrogen atom to which the groups R^6 and R^7 or R^8 and R^9 are bonded, and (A) is a sulfide or polysulfide linkage selected from the group consisting of S, S—S, S—S—S, S—S—S—S, S—S—S—S—S, and S—S—S—S—S—S or a linkage of the formula $S—(CH_2)_n—S$, n being an integer of 1, 2 or 3; and

(b) from 0.005 to 1% by weight of a 1,3,4-thiadiazole compound of the formula



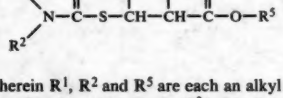
(III)

wherein R^{10} and R^{11} are each an alkyl group having from 1 to 30 carbon atoms.

7. A lubricant composition for improving fatigue life which comprises a lubricating base material containing the additives

(a) from 0.01 to 10% by weight of at least one compound selected from the group consisting of

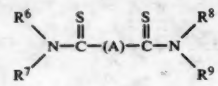
(i) a dithiocarbamic acid ester of the formula



(I)

wherein R^1, R^2 and R^5 are each an alkyl group having from 1 to 18 carbon atoms, R^3 is a hydrogen atom or an ester group of the formula —$COOR^5$ and R^4 is a hydrogen atom or methyl group;

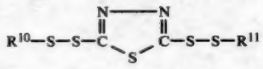
(ii) an alkyl thiocarbamoyl compound of the formula



(II)

wherein R^6, R^7, R^8 and R^9 are each an alkyl group having from 1 to 20 carbon atoms, each of the pairs of R^6 and R^7, and R^8 and R^9 may form a ring structure with the nitrogen atom to which the groups R^6 and R^7 or R^8 and R^9 are bonded, and (A) is a sulfide or polysulfide linkage selected from the group consisting of S, S—S, S—S—S, S—S—S—S, S—S—S—S—S, and S—S—S—S—S—S or a linkage of the formula $S-(CH_2)_n-S$, n being an integer of 1,2 or 3;

(b) from 0.005 to 1% by weight of a 1,3,4-thiadiazole compound of the formula



(III)

wherein R^{10} and R^{11} are each an alkyl group having from 1 to 30 carbon atoms; and

(c) an additive selected from the group consisting of sulfurized olefins, sulfurized oils, sulfurized oxymolybdenum organophosphorodithioates, sulfurized oxymolybdenum dithiocarbamates, phosphoric acid esters and phosphorous esters.

4,609,481

PROCESS FOR IMPROVING TRACTION COEFFICIENT OF TRACTION DRIVE FLUID AT HIGH TEMPERATURES

Toshiyuki Tsubouchi, Kisarazu, and Hitoshi Hata, Ichihara, both of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 626,311, Jun. 29, 1984, Pat. No. 4,525,290, which is a continuation-in-part of Ser. No. 502,966, Jun. 10, 1983, abandoned. This application May 21, 1985, Ser. No. 736,549

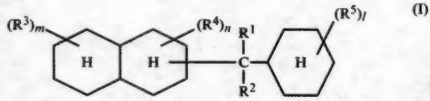
Claims priority, application Japan, Jun. 24, 1982, 57-107539; Feb. 21, 1983, 58-26325

The portion of the term of this patent subsequent to Jun. 25, 2002, has been disclaimed.

Int. Cl.[4] C07C *13/50*

U.S. Cl. 252—73 **18 Claims**

10. A process for improving the coefficient of traction between at least two relatively rotatable elements in a torque transmitting relationship and for maintaining said coefficient of traction substantially constant over a broad range of operating temperatures which comprises introducing between the tractive surfaces of said elements a traction drive fluid comprising at least one compound represented by the general formula (I):



(I)

wherein R^1 to R^5 are each hydrogen or an alkyl group containing from 1 to 4 carbon atoms, and l, m and n are each 1 to 3, said compound (I) comprising a mixture of 70% or less of the cis-form and 30% or more of the trans-form.

4,609,482

WASHING AND CLEANING AGENT WITH ANTIMYCETIC ACTION

Carl P. Wieland, Hochwaldstrasse 41, Baldham, Fed. Rep. of Germany (D-8011), assignor to C. P. Wieland and C. Zillich, both of Munich, Fed. Rep. of Germany

PCT No. PCT/DE84/00124, § 371 Date Feb. 14, 1985, § 102(e) Date Feb. 14, 1985, PCT Pub. No. WO85/00041, PCT Pub. Date Jan. 3, 1985

PCT Filed Jun. 4, 1984, Ser. No. 709,695

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1983, 3321840

Int. Cl.[4] C11D *3/48*

U.S. Cl. 252—106 **7 Claims**

1. Washing and cleansing agent with antimycetic action comprising from about 10% to about 40% sodium lauryl sulphate and from about 0.02 to about 0.5% imazalil.

4,609,483

SCALE INHIBITING COMPOSITION

Dionisio G. Cuisia, Chicago, and Chih M. Hwa, Palatine, both of Ill., assignors to W. R. Grace & Co., New York, N.Y.

Filed Mar. 7, 1985, Ser. No. 709,484

Int. Cl.[4] C02F *5/10*

U.S. Cl. 252—180 **9 Claims**

1. A composition for inhibiting the deposition of scale in aqueous systems consisting of a first component consisting of carboxymethylcellulose having molecular weight of about 90,000 to about 500,000, and a second component consisting of gluconic acid or glucoheptonic acid or both, or water soluble salts of one or both components.

4,609,484

INORGANIC CATION EXCHANGERS AND THE PROCESS FOR THEIR PREPARATION

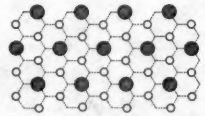
Giulio Alberti, Perugia; Francesco Bartoli, Rome; Umberto Costantino, Perugia, and Francesco Di Gregorio, Monterotondo, all of Italy, assignors to ENI Ente Nazionale Idrocarburi, Rome, Italy

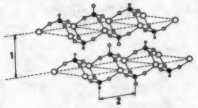
Filed Jul. 30, 1984, Ser. No. 635,407

Claims priority, application Italy, Aug. 1, 1983, 22365 A/83

Int. Cl.[4] C09K *3/00*; C01B *25/37*

U.S. Cl. 252—184 **27 Claims**





1. A cation exchanger comprising a solid solution of tetravalent metal acid salt of at least two oxygenated acids, of tetrahedron structure, of the elements phosphorous and/or arsenic, said cation exchanger further corresponding to the formula $M(HAO_4)_{2-x}(HAO_3)_x \cdot nH_2O$, where M is a tetravalent metal selected from Zr, Ti or Hf; A is phosphorus or arsenic; x is between 0.05 and 1.95; and n is a whole number or fraction between 0 and 6.

4,609,485
BIPYRIMIDINYL DERIVATIVES

Kisei Kitano; Tetsuya Ogawa; Yasuyuki Goto, all of Yokohamashi, and Naoyuki Yoshida, Kamakurashi, all of Japan, assignors to Chisso Corporation, Tokyo, Japan

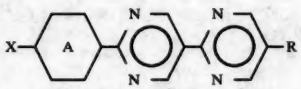
Filed Feb. 11, 1985, Ser. No. 700,271

Claims priority, application Japan, Feb. 17, 1984, 59-28337; Mar. 9, 1984, 59-44954

Int. Cl.[4] C09K *3/34;* **G02F** *1/13;* **C07D** *403/00*

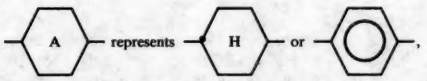
U.S. Cl. 252—299.61 **5 Claims**

1. 2,5'-Disubstituted-5,2'-bipyrimidinyls expressed by the formula



(I)

wherein



X represents a halogen atom of F, Cl or Br or cyano group or an alkyl group or an alkoxy group each having 1 to 10 carbon atoms and R represents an alkyl group or an alkoxy group each having 1 to 10 carbon atoms.

4,609,486
SILICONE WATER-BASED EMULSIONS HAVING IMPROVED SHELF LIFE

Alan L. Freiberg; Daniel Graiver; Thomas F. Lim, all of Midland, and Antony P. Wright, Rhodes, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Feb. 25, 1985, Ser. No. 704,976

Int. Cl.[4] B01J *13/00;* **C08L** *83/06;* **C09D** *5/34*

U.S. Cl. 252—310 **16 Claims**

12. A composition obtained by combining

(A) a curable, anionic silicone emulsion of the type comprising a continuous aqueous phase and a dispersed polydiorganosiloxane phase in which an organic tin compound is used as a catalyst, said emulsion having been aged until capable of yielding an elastomer upon removal of the water from the emulsion, and

(B) from 1 to 40 mols, per mol of organic tin compound, of an additive selected from the group consisting of alkyl mercaptan in which the alkyl group contains from 3 to 15 carbon atoms, 8-quinolinol, thioglycolic acid, and salts of thioglycolic acid.

13. The composition of claim **12** in which the anionic silicone emulsion of (A) comprises a continuous aqueous phase and a dispersed phase, the dispersed phase consisting essentially of an anionically stabilized hydroxylated polydiorganosiloxane which contains about 2 silicon-bonded hydroxyls per molecule, an organic tin compound, and a colloidal silica, said silicone emulsion having a pH in a range of 9 to 11.5 inclusive.

4,609,487
GEL-FORMING MIXTURE BASED ON AN ALKALI SILICATE AND A TRIALKOXYSILANE

Rudolf Burkhardt; Hansjürgen Hass, both of Troisdorf; Horst Hanisch, Mondorf, and Günter Vogel, Hennef, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 451,906, Dec. 21, 1982, abandoned. This application Feb. 19, 1985, Ser. No. 702,432

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1981, 3151680

Int. Cl.[4] B01J *13/00;* **C09J** *1/02*

U.S. Cl. 252—315.5 **7 Claims**

1. A gel-forming mixture consisting essentially of an aqueous alkali metal silicate solution having a density of 1.25 to 1.4 and as gelling agent, a trialkoxysilane of the formula

in which R is an aliphatic moiety of 1 to 6 carbon atoms and R^1, R^2 and R^3 which can be the same or different, represent alkyl moieties of 1 to 4 carbon atoms wherein the mole ratio of the silane to SiO_2 is 0.05:1 to 0.28:1.

4,609,488
REGENERATION OF AQUEOUS DEGREASING AND CLEANING SOLUTIONS

Jurgen Geke, Duesseldorf, and Bernd Stedry, Kempen, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Dec. 15, 1983, Ser. No. 561,625

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1982, 3247431

Int. Cl.[4] B01D *17/04;* **B08B** *7/04;* **C23G** *1/36*

U.S. Cl. 252—344 **7 Claims**

1. A process for regenerating aqueous alkaline or neutral degreasing and cleaning solutions contaminated with an emulsified oil containing an anionic emulsifier comprising adding thereto an effective quantity of a cationic demulsifier which is a nitrogen-containing cationically modified polymer wherein the cationic modification is by either protonation or alkylation, and wherein the polymer consists essentially of polyethylene imine or a methylated polymer of ethylene imine.

4,609,489
FLUORINE-CONTAINING SURFACE ACTIVE COMPOSITION

Iwao Hisamoto, Osaka; Chiaki Maeda, Kyoto, and Mitsuhiro Nishiwaki, Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 277,685, Jun. 26, 1981, Pat. No. 4,459,221. This application Mar. 29, 1984, Ser. No. 594,734

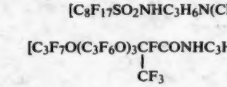
Claims priority, application Japan, Jun. 27, 1980, 55-88345

The portion of the term of this patent subsequent to Jul. 10, 2001, has been disclaimed.

Int. Cl.[4] B01F *17/18, 17/26, 17/32*

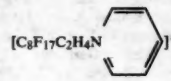
U.S. Cl. 252—355 **2 Claims**

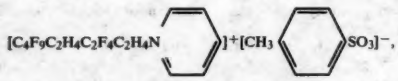
1. A fluorine-containing surface active composition consisting essentially of from 10 to 90 parts by weight of a cationic surfactant selected from at least one member of the group consisting of:



-continued

$[C_9F_{19}C_2H_4N(CH_3)_3]^+Br^-$,

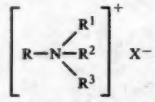




$[C_7F_{15}CONHC_3H_6N(CH_3)_3]_2{}^+SO_4{}^{--}$, and
$[C_9F_{19}CH_2CH(OH)CH_2N(C_2H_5)_2(CH_3)]^+I^-$;

and

from 90 to 10 parts by weight of at least one surfactant of the formula:



wherein R is a substituted or unsubstituted aliphatic group of 4 to 20 carbon atoms or a substituted or unsubstituted aromatic hydrocarbon group of 6 to 20 carbon atoms, R^1, R^2 and R^3 are each a hydrogen atom, a substituted or unsubstituted aliphatic group of 4 to 20 carbon atoms, a substituted or unsubstituted aromatic hydrocarbon group of 6 to 20 carbon atoms or a fluorine-containing group comprising not more than 5 carbon atoms, of which each carbon atom bears at least one fluorine atom, and X^- is an anion, provided that at least one of R^1, R^2, and R^3 is a fluorine-containing group or, when none of R^1, R^2 and R^3 is the fluorine-containing group, X^- is a fluorine-containing anion corresponding to the fluorine-containing group.

4,609,490

PREPARATION OF DEFOAMING AGENT FOR THE MANUFACTURE OF BEAN CURD

Masumi Itoh, Ibaraki, and Seishi Takenawa, Nara, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Aug. 6, 1984, Ser. No. 637,828

Claims priority, application Japan, Aug. 16, 1983, 58-149967

Int. Cl.[4] B01D *19/04;* **C09K** *3/00*

U.S. Cl. 252—358 **1 Claim**

1. A process for preparing a defoaming agent for the manufacture of bean curd which comprises blending glycerol fatty acid ester(s) containing not less than about 90% of glycerol fatty acid monoester(s) with additive(s) and then melting the resulting mixture and then granulating the resultant and then selecting the granules, the size of which is not less than 300 μm by sieving.

4,609,491

TRI- AND TETRA-SUBSTITUTED CYCLOHEXEN-1-METHYL ACETATES AS ODORANTS

Hanspeter Schenk, Zumikon, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

Filed May 23, 1983, Ser. No. 497,340

Claims priority, application Switzerland, Jun. 3, 1982, 3398/82

Int. Cl.[4] A61K *7/46;* **C07C** *67/02*

U.S. Cl. 252—522 R **9 Claims**

1. A method for improving the odor of a fragrance composition which comprises adding thereto an olfactorily effective amount of a mixture of 2-ethyl-6,6-dimethyl-2-cyclohexene-1-methyl acetate and 2,3,6,6-tetramethyl-2-cyclohexene-1-methyl acetate.

7. The mixture 2-ethyl-6,6-dimethyl-2-cyclohexene-1-methyl acetate and 2,3,6,6-tetramethyl-2-cyclohexene-1-methyl acetate.

4,609,492

PERFUME COMPOSITION CONTAINING AN UNSATURATED ALIPHATIC CARBOXYLIC ACID

Go Hata, Fujisawa; Takeaki Etoh, Noda; Toshifumi Shirakawa, Noda; Yuji Matsuura, Noda, and Takashi Uchiyama, Koshigaya, all of Japan, assignors to Soda Aromatic Company, Limited, Tokyo, Japan

Continuation of Ser. No. 432,870, Oct. 5, 1982, abandoned. This application Jul. 2, 1985, Ser. No. 751,626

Claims priority, application Japan, Oct. 6, 1981, 56-158134

Int. Cl.[4] A61K *7/46*

U.S. Cl. 252—522 R **2 Claims**

1. A perfume composition which comprises as an essential active ingredient an effective fragrance- and/or flavor-modifying amount of trans-6-decenoic acid in association with conventional perfume or flavor components.

4,609,493

SOLUTION AND METHOD FOR REMOVING INORGANIC AND ORGANIC DEPOSITS FROM CONTACT LENSES

Rolf Schäfer, Arisdorf, Switzerland, assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Dec. 28, 1984, Ser. No. 687,275

Int. Cl.[4] C11D *1/06, 3/33, 3/386*

U.S. Cl. 252—546 **6 Claims**

1. An aqueous contact lens cleaning solution, comprising from about 0.01 to 5.0 weight/volume percent of an enzyme having proteolytic activity and from about 0.02 to 1.0 weight-/volume percent of an anionic surfactant of formula:

$$R—O—(CH_2—CH_2—O)_z—CH_2—COOH \quad \text{(II)}$$

in which z is a whole number from 1 to 25 and R is a C_8 to C_{18} hydrocarbon chain.

4,609,494

5-ACETYL-3,4,5,6-TETRAHYDRO-4-OXO-2,6-METHANO-2H-1,3,5-BENZOTHIAZOCINE(BENZODIAZOCINE)-11-CARBOXYLATES USEFUL AS CALCIUM CHANNEL BLOCKERS

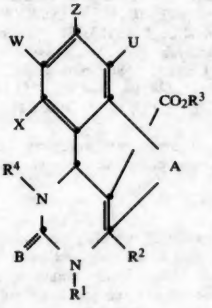
John J. Baldwin, Gwynedd Valley; David A. Claremon, Audubon, and David E. McClure, Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 21, 1985, Ser. No. 703,953

Int. Cl.[4] C07D *515/08*

U.S. Cl. 260—243.3 **6 Claims**

1. A compound represented by the following structural formula (I):



(I)

wherein:

A and B are independently oxygen or sulfur;

R^1 is hydrogen;

R^2 is hydrogen, C_1–C_8 alkyl, C_2–C_8 alkenyl, C_3–C_8 cycloalkyl, or C_1–C_8 hydroxyalkyl;

R^3 is C_1–C_8 alkyl, C_2–C_8 alkenyl, C_3–C_8 cycloalkyl, C_1–C_8 hydroxyalkyl, C_1–C_8 dihydroxyalkyl, C_2–C_8 alkoxyalkyl, C_3–C_8 alkoxy(alkoxyalkyl), C_1–C_8 aminoalkyl wherein the amino group is NR^5R^6 in which R^5 and R^6 independently are hydrogen, C_1–C_8 alkyl, C_7–C_{14} phenylalkyl;

R^4 is COY wherein Y is C_1–C_8 alkyl, C_2–C_8 alkenyl, C_3–C_8 cycloalkyl, C_1–C_8 alkoxy, C_2–C_8 alkenyloxy, C_3–C_8 cycloalkoxy or NR^5R^6wherein R^5 and R^6 are defined above; and

X, W, Z and U are independently hydrogen, C_1–C_8 alkyl, C_1–C_8 alkoxy, C_1–C_8 alkylthio, C_1–C_8 alkyl S(O), C_1–C_8 alkyl $S(O)_2$, CF_3, cyano, nitro, halo or $CONR^5R^6$ wherein R^5 and R^6 are defined above, provided that at least two of X, W, Z and U are hydrogen or X and W or W and Z or Z and U together with the phenyl group to which they are attached form a naphthyl or benzoxadiazole group,

or a pharmaceutically acceptable salt thereof.

6. A method of treatment for cardiovascular disorders which comprises administering to a subject in need of such treatment a nontoxic therapeutically effective amount of a compound according to claim 1.

4,609,495

CLAVULANIC ACID ETHERS AS ANTIBACTERIAL AGENTS

Roger J. Ponsford, Horsham, and Thomas T. Howarth, Cranleigh, both of United Kingdom, assignors to Beecham Group p.l.c., United Kingdom

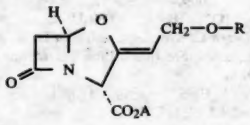
Continuation of Ser. No. 786,345, Apr. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 730,475, Oct. 7, 1976, abandoned. This application Jun. 29, 1981, Ser. No. 278,564

Claims priority, application United Kingdom, Oct. 13, 1975, 41897/75; Jan. 23, 1976, 02629/76; May 8, 1976, 19000/76; Nov. 27, 1976, 49570/76; Nov. 27, 1976, 49569/76; Dec. 11, 1976, 51808/76; Mar. 10, 1977, 10116/77; Mar. 14, 1977, 11116/77

Int. Cl.⁴ C07D *498/04;* A61K *31/42*

U.S. Cl. 540—349 **87 Claims**

1. An ether of the formula (II):



(II)

wherein R is a hydrocarbon of up to 18 carbon atoms unsubstituted or substituted by halogen, a group of the formula OR^1, OH, $OCOR^1$, COR^1, CO_2R^1, NR^2COR^1, $NR^2CO_2R^1$, SOR^1, SO_2R^1, NH_2, NR^1R^2, NO_2, $CONR^1R^2$, carboxyl or a pharmaceutically acceptable salted carboxyl or by halogen and one of said groups, wherein R^1 is a hydrocarbon of up to 8 carbon atoms and R^2 is a hydrocarbon of up to 4 carbon atoms and A is a group such that CO_2A is a carboxylic acid moiety or a pharmaceutically acceptable salt or pharmaceutically acceptable ester thereof.

4,609,496

STEROID ESTERS OF N-(2-HALOGENOETHYL)-N-NITROSO-CARBAMOYL-AMINO ACIDS AND PEPTIDES THEREOF, AS WELL AS METHODS FOR PREPARING THEM

Gerhard Eisenbrand, Sandhausen, and Joachim Schreiber, Heidelberg, both of Fed. Rep. of Germany, assignors to Stiftung Deutsches Krebsforshungszentrum, Heidelberg, Fed. Rep. of Germany

PCT No. PCT/EP83/00090, § 371 Date Nov. 17, 1983, § 102(e) Date Nov. 17, 1983, PCT Pub. No. WO83/03414, PCT Pub. Date Oct. 13, 1983

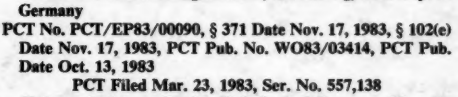
PCT Filed Mar. 23, 1983, Ser. No. 557,138

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1982, 3210637

Int. Cl.⁴ C07J *1/00*

U.S. Cl. 260—397.4 **15 Claims**

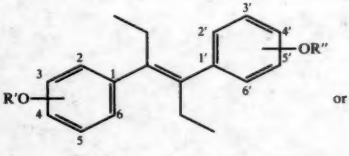
1. A method for preparing N-(2-Hal-ethyl)-N-nitroso-carbamoyl-amino acid steroid esters having the structure:



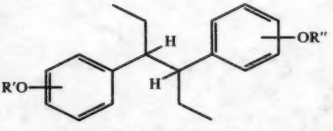
wherein

R_1 and R_2, which may be identical or different, signify the radical of an amino acid from the carbon atom in the beta position or H;

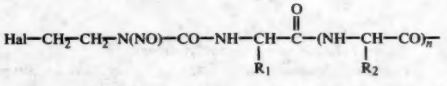
R_3 signifies the esterified radical of a steroid, having an esterifiable OH group at the 3, 17 or 21 position attached to the steroid skeleton thereof, of the estrane, androstane or pregnane series or a corticostoid, or of a stilbene derivative having at least one esterifiable OH group without steric hindrance and selected from:



or



with R′ =

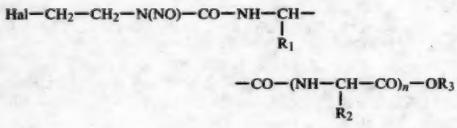


and

R'' is H, R, lower alkyl, acetyl or benzoyl;

n is 0 to 5; and Hal is chlorine or fluorine, said R_3 radical having a free reactive site which binds itself selectively to a receptor site on a neoplastic cell wherein N-(2-Hal-ethyl)-N-nitrosocarbamoyl-amino acids or N-(2-Hal-ethyl)-N-nitroso-carbomoyl-di-, tri- or oligopeptides, up to hexapeptides, are converted in a solvent with cooperation of an activation or condensation agent selected from the group consisting of N,N'-carbonyl-diimidazole, dicychlohexylcarbodiimide and p-toluolsulfonylchloride/tertiary amine, with steroid alcohols or stilbene derivatives corresponding to the corresponding said steroid esters.

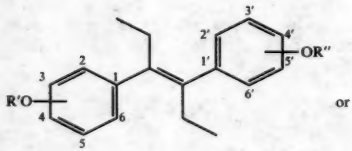
13. Steroid-N-(2-halogenethyl)-N-nitroso-carbamoyl-amino acid or peptide ester of the general formula:



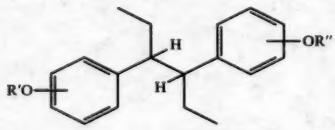
wherein

R_1 and R_2, which may be identical or different, signify the radical of an amino acid from the carbon atom in the beta position or H;

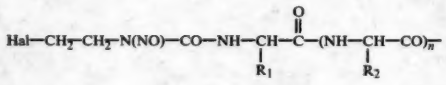
R_3 signifies the esterified radical of a steroid, having an esterifiable OH group at the 3, 17 or 21 position attached to the steroid skeleton thereof, of the estrane, androstane or pregnane series or a corticostoid, or of a stilbene derivative having at least one esterifiable OH group without steric hindrance and selected from:



or



with R' =



and

R'' is H, R, lower alkyl, acetyl or benzoyl;

n is 0 to 5; and Hal is chlorine or fluorine, said R_3 radical having a free reactive site which binds itself selectively to a receptor site on a neoplastic cell.

4,609,497

PROCESS FOR SEPARATING SURFACTANTS USED IN THE MANUFACTURE OF CONCENTRATED FLUOROPOLYMER DISPERSIONS

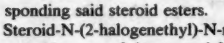
Charles S. Cope, Parkersburg, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 14, 1985, Ser. No. 711,834

Int. Cl.[4] C07B 53/21; C09F 7/00; C11C 3/00

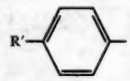
U.S. Cl. 260—408 1 Claim

1. A process for separating the ammonium or alkali metal salt of a fluoroalkanoic acid having the general formula



wherein X is a member of the class consisting of hydrogen fluorine or chlorine and R_f is a saturated, perfluorinated linear or methyl branched alkylene group containing 5 to 10 carbon atoms, from a hydrocarbyl oxyethoxylated polyether having the general formula

where R is a primary or secondary alkyl group of (11–18) carbon atoms or is



where R' is a primary, secondary or tertiary alkyl group containing 8 to 12 carbon atoms, and y is a cardinal number of from 8 to 14, where both are present in an aqueous mixture, which comprise:

A. extracting the fluoroalkanoate salt (in the form of its corresponding acid) and the ethoxylated compound from an acidified aqueous mixture containing both by agitating the aqueous mixture with a chlorinated hydrocarbon organic liquid selected from dichloromethane or trichloromethane and separating the organic liquid layer,

B. (1) contacting said organic liquid layer with activated alumina whereby the fluoroalkanoic acid is adsorbed onto the alumina, and separating the organic liquid and the alumina,

B. (2) contacting the alumina with ammonium hydroxide to remove the fluoroalkanoic acid from the alumina,

C. boiling off the organic liquid obtained in step B.(1) until the ethoxylated compound remains,

D. (1) acidifying the ammonium hydroxide solution obtained in step B.(2) until the pH of the solution is 1 or less and isolating the denser organic phase from the lighter aqueous phase formed,

D. (2) steam distilling the organic phase after acidifying it with a mineral acid until the weight ratio of mineral acid to water is at least 1:1, and collecting the organic portion,

D. (3) steam distilling said organic portion in the combined presence of a mineral acid, present in a weight ratio of mineral acid to water of at least 1:1 and a non-volatile oxidizing agent, and collecting the fluoroalkanoic acid distilled.

4,609,498

PREPARATION OF GOSSYPLURE

Dennis S. Banasiak; Edward C. Mozdzen, and Jim D. Byers, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 14, 1985, Ser. No. 711,891

Int. Cl.[4] C11C 3/02

U.S. Cl. 260—410.9 R 19 Claims

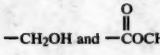
1. A process for the synthesis of gossyplure (7(Z), 11(Z,E)-hexadecadienyl acetate) which comprises:

(a) disproportionating 1,5-cyclooctadiene and 1-hexane in

the presence of a disproportionation catalyst under disproportionation conditions suitable to produce 1,5,9-tetradecatriene;

(b) metallating the 1,5,9-tetradecatriene obtained in step (a) with a metallating agent under suitable conditions to form a 1-metallo-5,9-tetradecadiene, having the empirical formula $C_{14}H_{25}M$ wherein M is selected from the group consisting of MgX, MgR', BR_2, AlR_2, and $(Ar)_2ZrX$ wherein X is Cl, Br or I, each R is independently a C_1 to C_{10} carbon radical wherein at least one R group is selected from the group consisting of secondary and tertiary alkyl groups, and each R can be connected to the other as part of a ring structure; R' is a C_2 to C_{10} carbon radical and Ar is an aromatic ligand having 5–10 carbon atoms;

(c) contacting the 1-metallo-5,9-tetradecatriene with a C_2-synthon which is reactive with the terminally substituted organometallic bond under conditions suitable to form a 1-substituted-7,11-hexadecadiene, having the empirical formula $C_{15}H_{27}Z$; wherein Z is selected from the group consisting of



$-CH_2OH$ and $-COCH_3$;

and

(d) converting Z into the acetate moiety, $-CH_2OCOCH_3$.

4,609,499

RUBBER-STEEL CORD ADHESION PROMOTER

Yasuyoshi Esashi, Omigawa; Fumiaki Yoneyama, Kamisu, and Yoshihisa Ogihara, Sawara, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

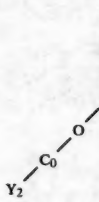
Filed Jan. 25, 1985, Ser. No. 694,763

Claims priority, application Japan, Jan. 30, 1984, 59-13335

Int. Cl.[4] C07F *15/06*

U.S. Cl. 260—414 **3 Claims**

1. A rubber-steel cord adhesion promoter represented by the general formula:



(I)

wherein Y_1, Y_2 and Y_3 are identical or different and each represents a resin acid radical, a naphthenic acid radical or an aliphatic monocarboxylic acid radical having 16 to 24 carbon atoms.

4,609,500

REFINING OF OIL AND PRODUCT THEREOF

Leopold R. Strecker, Union, N.J., assignor to CPC International Inc., Englewood Cliffs, N.J.

Continuation-in-part of Ser. No. 311,571, Oct. 15, 1981, abandoned. This application Feb. 28, 1983, Ser. No. 470,120

Int. Cl.[4] C11B *3/08*

U.S. Cl. 260—423 **12 Claims**

1. A process for the refining of crude vegetable oils to provide a product having good oxidative, flavor and cold-test stabilities, comprising the steps of:

(a) degumming the crude oil by

(i) combining said crude oil with a small quantity of water to form a mixture,

(ii) agitating said mixture, and

(iii) separating the oil from the water and precipitating impurities;

(b) degumming/demetalizing the degummed oil obtained in step (a)(iii) by

(i) combining said oil with a small amount of a degumming/demetalizing reagent to form a mixture,

(ii) agitating said mixture,

(iii) combining the mixture with a small amount of water,

(iv) agitating the mixture, and

(v) separating the oil from the residual impurities;

(c) bleaching the degummed/demetalized oil obtained in step (b)(v) by

(i) combining said oil with an amount of phosphoric acid in aqueous solution so as to form a mixture with at least two one-hundredths of a percent phosphoric acid by weight,

(ii) maintaining the mixture at a suitable temperature while agitating intensely to allow reaction,

(iii) combining the mixture thus treated in step (c)(ii) with a bleaching agent in proportions of 25:1 to 33.3:1 to said phosphoric acid to allow in the final product a level of up to three parts per million residual phosphorus derived from the phosphoric acid added in step (c)(i),

(iv) raising the temperature of the mixture of step (c)(iii) under vacuum to an effective temperature for the action of the bleaching agent and maintaining said temperature while agitating said mixture,

(v) cooling the mixture of step (c)(iv) to a temperature at which the vacuum can be broken, and

(vi) filtering the bleached oil; then

(d) steam refining-deodorizing the bleached oil obtained in step (c)(vi).

4,609,501

PROCESS FOR THE PREPARATION OF AROMATIC CARBONATES

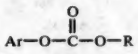
Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 27, 1983, Ser. No. 565,895

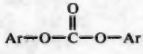
Int. Cl.[4] C07C *68/06*

U.S. Cl. 260—463 **10 Claims**

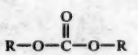
1. An improved process for preparing an aromatic carbonate selected from aliphatic aromatic carbonates represented by the formula



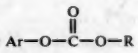
and diaromatic carbonates represented by the formula



which comprises reacting a phenolic compound with a dialiphatic carbonate represented by the formula



or an aliphatic aromatic carbonate represented by the formula



wherein Ar is selected from monovalent aromatic radicals and R is independently selected from monovalent aliphatic radicals in the presence of a catalytic amount of catalyst, the improvement consisting essentially of utilizing as the catalyst a physical

admixture consisting essentially of (i) at least one Lewis acid, and (ii) at least one protic acid.

4,609,502

PROCESS FOR PREPARING UNSATURATED NITRILES FROM ALKANES

Sargis Khoobiar, Kinnelon, N.J., and Arnold J. Shapiro, Bronx, N.Y., assignors to The Halcon SD Group, Inc., Montvale, N.J.

Filed Feb. 14, 1985, Ser. No. 701,725
Int. Cl.[4] C07C *120/14*
U.S. Cl. 558—320 1 Claim

1. A process for the preparation of acrylonitrile from propane comprising:

(a) dehydrogenating propane to propylene, in the presence of 0.1 to 10 mols of steam for each mol of propane, over a dehydrogenation catalyst comprising a Group VIII noble metal at a temperature of about 400°–700° C. and a pressure of about 0.1–5 bar to form an effluent stream comprising propylene, hydrogen, carbon oxides, steam, light hydrocarbons, and unreacted propane;

(b) mixing oxygen and ammonia with said effluent stream of (a) and passing the mixture over an ammoxidation catalyst at a temperature of about 375°–550° C. and a pressure of about 0.1–10 bar selected to convert about 30% to 80% of said propylene with a selectivity to acrylonitrile of about 80% to 90% and producing an effluent stream comprising the acrylonitrile, unreacted propane and propylene, oxygen, hydrogen, steam, light hydrocarbons, and carbon oxides;

(c) absorbing said acrylonitrile from said effluent of (b) into an aqueous stream;

(d) selectively oxidizing the hydrogen from the acrylonitrile-depleted effluent of (c) to water over a catalyst;

(e) separating a portion of the effluent stream of (d) after said oxidation containing the net production of carbon oxides and light hydrocarbons, recovering a major portion of the propane and propylene content thereof, and returning said recovered propane and propylene to the dehydrogenation step of (a); and

(f) returning the effluent stream of (d) after the separation of a portion thereof in (e) to the dehydrogenation step of (a).

4,609,503

PROCESS FOR THE PREPARATION OF 1-AMINO-8-NAPHTHOL-4,6-DISULPHONIC ACID (K-ACID)

Horst Behre; Heinz U. Blank, both of Odenthal, and Willi Schössler, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesselschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 76,052, Sep. 17, 1979, abandoned. This application Oct. 8, 1980, Ser. No. 195,024
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843680
Int. Cl.[4] C07C *143/64*
U.S. Cl. 260—509 2 Claims

1. Process for the preparation of mono-alkali metal salts of 1-amino-8-naphthol-4,6-disulphonic acid, which comprises reacting a mixture of naphthylaminetrisulphonic acids and/or salts thereof containing over 40% by weight of 1-naphthylamine-4,6,8-trisulphonic acid relative to the amount of diazotizable substances with an alkali metal hydroxide solution under elevated pressure and at elevated temperature and isolating 1-amino-8-naphthol-3,6-disulphonic aacid (H-acid) and 1-amino-8-naphthol-4,6-disulphonic acid (K-acid), in each case in the form of their mono-alkali metal salts, from the hydrolysis mixture by adjusting its ph-value to a value in the range from 0 to 4 with a mineral acid and by diluting it by introducing 0.1 to 5 times the hydrolysis under pressure and separating off first the H-acid at a temperature in the range from 40° to 100° C. and then the K-acid at a temperature in the range from −5° to 40° C.

4,609,504

PROCESS FOR THE PREPARATION OF ACETIC ANHYDRIDE

Jean Gauthier-Lafaye, Lyons, and Robert Perron, Charly, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Dec. 17, 1981, Ser. No. 331,828
Claims priority, application France, Dec. 24, 1980, 80 27941
Int. Cl.[4] C07C *51/56*
U.S. Cl. 260—549 20 Claims

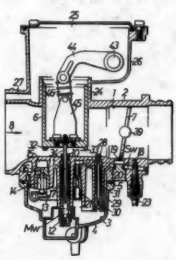
1. A process for the preparation of acetic anhydride which comprises carbonylating methyl acetate in an anhydrous medium, in the liquid phase, in the presence of an effective amount of a catalyst comprised of nickel, methyl iodide, a quaternary ammonium or quaternary phosphonium iodide and a lithium salt, at a total pressure between about 25 and 200 bars, said anhydrous medium consisting of components selected from the group consisting of (1) methyl acetate and said catalyst and (2) methyl acetate, said catalyst and acetic anhydride.

4,609,505

VARIABLE VENTURI TYPE CARBURETOR

Michio Tahata, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1985, Ser. No. 724,517
Claims priority, application Japan, Apr. 27, 1984, 59-85673
Int. Cl.[4] F02M *9/06*
U.S. Cl. 261—41 R 8 Claims



1. A variable venturi type carburetor comprising a carburetor body provided with a suction passage therein for flow of air through said passage, a slide valve supported by said body for slidable movement across said suction passage to serve as a variable venturi, a butterfly throttle valve pivotably supported by said carburetor body downstream of said slide valve, interlocking means connecting said slide valve and said butterfly throttle valve together for operating in correspondence with one another, operating means connected to one of said valves for operating the same by application of an external force thereto, a low-speed fuel nozzle opening into said suction passage in the vicinity of said butterfly throttle valve, an intermediate- and high speed main fuel nozzle opening into said suction passage opposite said slide valve, and a low and intermediate-speed primary fuel nozzle opening into said suction passage between said slide valve and said butterfly throttle valve, said slide valve including a bottom portion having a front side surface facing upstream in the suction passsage and a rear side surface facing downstream in the suction passage, said front and rear side surfaces having lower edges which are located in the same horizontal plane, said rear side surface being provided with an inverted cutaway.

4,609,506

THROTTLED FLUID MIXING DEVICE

Bengt Berglund, Forel/Lavaux, Switzerland, assignor to Spiro Investment A.G., Boesingen, Switzerland

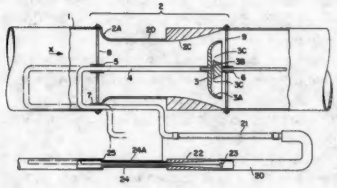
PCT No. PCT/GB84/00186, § 371 Date Jan. 25, 1985, § 102(e) Date Jan. 25, 1985, PCT Pub. No. WO84/04798, PCT Pub. Date Dec. 6, 1984

PCT Filed May 25, 1984, Ser. No. 694,754

Claims priority, application United Kingdom, May 26, 1983, 8314622

Int. Cl.[4] F02M 7/22

U.S. Cl. 261—44 A 10 Claims



1. A fluid mixing valve comprising:

a first fluid conduit containing a first valve casing having an inner face that widens outwardly from a fluid inflow end to a fluid outflow end and a first valve member which is convex toward said fluid inflow end, concave toward said fluid outflow end and is linearly axially movable relatively to said casing in order to vary an annular gap between the valve member and the valve casing, the profile of the said inner face of said first valve casing being so shaped that there is a first, predetermined mathematical relationship between the linear displacement of the said first valve member and the drag coefficient of the fluid flow path defined by said first valve member and said first valve casing;

a second fluid conduit containing a second valve casing having an inner face that widens outwardly from a fluid inflow end to a fluid outflow end and a second valve member of a configuration substantially the same as that of said first valve member which is linearly axially movable relatively to said second casing in order to vary an annular gap between the valve member and the valve casing, the profile of the said inner face of said second valve casing being so shaped that there is a second, predetermined mathematical relationship between the linear displacement of the said second valve member and the drag coefficient of the fluid flow path defined by said second valve member and said second valve casing;

means coupling said second fluid conduit to said first fluid conduit whereby a second fluid delivered from said second conduit can enter said first fluid conduit on the downstream side of said first valve member for mixing with a first fluid flowing in said first conduit in a region of turbulence immediately on the downstream side of said first valve member; and

means so coupling said first and second valve members for common movement that a predetermined ratio of the two mixed fluids flowing in said first conduit can be maintained regardless of the total volume of flow of the two fluids.

4,609,507

METHOD FOR CASTING POLYMERIC GELS FROM VOLATILE MIXTURES OF MONOMER IN OPEN MOLDS AND APPARATUS FOR PERFORMING THIS METHOD

Otto Wichterle, and Ivan Wichterle, both of Prague, Czechoslovakia, assignors to Ceskoslovenska Akademi Ved, Prague, Czechoslovakia

Filed Apr. 3, 1985, Ser. No. 718,683

Claims priority, application Czechoslovakia, Apr. 6, 1984, 2657-84

Int. Cl.[4] B29D 11/00

U.S. Cl. 264—1.1 15 Claims

1. A method of casting a polymeric gel in an open mold from a liquid polymerization mixture containing at least one volatile monomer component dissolved therein which comprises providing a protective gas above the open surface of the polymerization mixture during polymerization, said protective gas prior to coming into contact with said open surface of the polymerization mixture being combined with an amount of said volatile monomer which wil be in equilibrium with the volatile monomer present within the polymerization mixture under polymerization conditions.

4,609,508

METHOD FOR THE MANUFACTURE OF IMPLANTABLE ELECTRODES OF VITREOUS CARBON

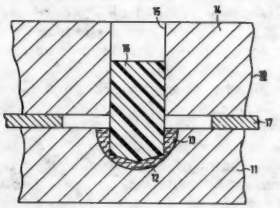
Martin Edeling, Erlangen-Frauenaurach; Konrad Münd, Uttenreuth; Raghavendra Rao, Erlangen, and Erhard Weidlich, Spardorf, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 10, 1984, Ser. No. 659,442

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1983, 3337470

Int. Cl.[4] B29C 39/10

U.S. Cl. 264—29.6 17 Claims



1. A method for preparing implantable electrodes having an electrode head and stem of vitreous carbon comprising the steps of:

(a) preparing a hardened resin precondensate electrode stem blank; and

(b) in a casting mold, casting a resin precondensate electrode head onto said electrode stem blank and cross-linking the cast electrode head; and

(c) hardening the cross-linked electrode head; and

(d) converting the resins of said hardenened electrode head and said hardened electrode stem blank into vitreous carbon by pyrolysis to provide a smooth surfaced vitreous carbon electrode head.

4,609,509

PROCESS AND APPARATUS FOR VULCANIZING THE INSULATION OF AN ELECTRIC CABLE

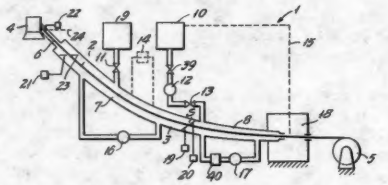
Marcello Sarracino, Milan, Italy, assignor to Societa' Cavi Pirelli S.p.A., Italy

Continuation of Ser. No. 472,768, Mar. 7, 1983, abandoned. This application Sep. 25, 1984, Ser. No. 654,532

Claims priority, application Italy, Mar. 16, 1982, 20171 A/82

Int. Cl.[4] B29C *35/06*

U.S. Cl. 264—38 **13 Claims**



1. In a process in which insulation which generates vulcanization products during vulcanization is extruded around a cable core and the core with the insulation therearound is continuously fed into the entrance end of a tube for vulcanizing the insulation and is continuously removed from the opposite, exit end of the tube, said tube having two sections filled with degassed liquid under pressure, said liquid having a specific weight substantially equal to the specific weight of the insulation, the portion of the liquid in the first of the two sections being at vulcanizing temperature and having a first viscosity and the portion of the liquid in the second of the two sections being cooler than and having a viscosity different from respectively, the temperature and viscosity of the liquid in said first section to provide a liquid interface between the first and second sections which avoids significant reciprocal mixing of the liquid in the first and second sections, and a portion of the liquid in said first section being circulated therein and a portion of the liquid in said second section being circulated therein, the steps of:

supplying degassed said liquid at the temperature in said second section to said second section until it reaches the level of said interface;

maintaining said liquid in the second section at the level of said interface by continuing to supply the liquid to the second section at a rate which will compensate for losses of the liquid at the exit end of said tube;

supplying degassed said liquid at the vulcanizing temperature to said first section;

after the liquids have been so supplied to the sections, continuously feeding the insulation covered core through the sections to vulcanize and cool the insulation;

during the vulcanizing and cooling of the insulation as the cable passes through the sections, continuing to maintain said interface by continuing to supply the liquid to said second section; and

while the cable is being passed through the tube and so treated in the sections, removing at least a portion of the liquid at vulcanizing temperature in the first section and a portion of the cooler liquid in the second section, removing from each of the portions of the liquid removed from the first and second sections products generated during the vulcanizing of the insulation and after removal of at least a portion of said products from the liquid from said first section, returning the latter liquid to said first section, after removal of at least a portion of said products from the liquid from said second section, returning the latter liquid to said second section, the rate of removal of liquids from the first and second sections, the rate of removal of said products from the liquids and the rate of return of the liquids to said sections being selected to prevent saturation of the liquids in said sections by said products while the cable is being passed through the tube.

4. Apparatus for the continuous production of a cable having a core covered by vulcanized insulation, said apparatus comprising:

an extruder for extruding insulation around said core, said insulation being of a type which generates gasses during vulcanization;

a vulcanizing tube for receiving said core covered by insulation;

means connecting said extruder to one end, an input end, of said tube in fluid-tight relation thereto;

a liquid having a specific weight substantially equal to the specific weight of said insulation in said tube, the portion of said liquid in a first section of said tube nearer said extruder having a vulcanizing temperature and the portion of said liquid in a second section of said tube more remote from said extruder than said first section having a lower temperature and a viscosity different from the viscosity of the liquid in said first section of said tube to provide a liquid interface between the liquid in said first section and the liquid in said second section;

a first storage tank containing said liquid at said vulcanizing temperature;

first circulatory means for circulating said liquid in said first tank between said first tank and said first section, said first circulatory means comprising degassing means for removing gas from the liquid circulated between said tank and said first section at a rate which prevents saturation of the liquid in the tube by said gasses while said core is in said tube;

a second tank containing said liquid at said lower temperature; and

second circulatory means for circulating said liquid in said second tank between said second tank and said second section, said second circulatory means comprising degassing means for removing gas from the liquid circulated between said second tank and said second section at a rate which prevents saturation of the liquid in the tube by said gasses.

4,609,510

TIRE MANUFACTURING PROCESS

Robert G. Flygenring, Christchurch, New Zealand, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Dec. 21, 1984, Ser. No. 684,828

Claims priority, application New Zealand, Dec. 22, 1983, 206689

Int. Cl.[4] B29C *35/02*

U.S. Cl. 264—39 **6 Claims**

1. A tire manufacturing process of the type using a reusable rubber or similar curing bag or bladder to cure successive tires in a plurality of cycles, said process comprising deflating and purging the curing bag or bladder between successive curing cycles of said tire manufacturing process, and preventing oxygen bearing medium from entering said curing bag or bladder during said deflating and purging by supplying a non-reactive medium upstream of the curing bag or bladder at a positive pressure which is sufficient to prevent bleeding of air at joints, valves, and similar structure into a supply line along which said non-reactive medium travels when it is conducted to said curing bag or bladder, said curing bag or bladder being simultaneously deflated and purged by drawing a vacuum while said non-reactive medium is being supplied at said positive pressure, said drawn vacuum being maintained until said curing bag or bladder is inflated preparatory to a successive curing cycle.

4,609,511

RELEASE AGENT AND PROCESS PERFORMABLE THEREWITH FOR THE PRODUCTION OF POLYURETHANE FOAM

Wolfgang Fischer, Murlenbach, and William Krug, Heidelberg, both of Fed. Rep. of Germany, assignors to W. R. Grace & Co., Lexington, Mass.

Continuation of Ser. No. 707,370, Mar. 1, 1985, abandoned. This application Jan. 15, 1986, Ser. No. 819,465

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1984, 3410219

Int. Cl.[4] C08G *18/14*

U.S. Cl. 264—51 9 Claims

1. A release agent suitable for the production of polyurethane foam articles in molds comprising an aqueous emulsion or dispersion of per se known release-effective substances having a water content of at least 60% by weight and preferably 85 to 96% by weight, the water being masked through the effect of lyotropic mesomorphism.

4,609,512

PROCESS FOR CONTROLLING BEAD SIZE IN THE MANUFACTURE OF EXPANDABLE STYRENE POLYMERS BY SUSPENSION POLYMERIZATION

Josef K. Rigler, Recklinghausen; Dirk Reese, and Horst Leithäuser, both of Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Aug. 27, 1984, Ser. No. 644,253

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1983, 3331569

Int. Cl.[4] C08J *9/22, 9/20*

U.S. Cl. 264—53 16 Claims

12. In a process for the preparation of shaped bodies based on expanded styrene polymers comprising: the polymerization of styrene or a mixture thereof with at least one monomer copolymerizable therewith, in an aqueous medium having an aqueous phase and an organic phase in the presence of organic protective colloids and radical forming initiators and expanding agents, pre-forming of the resulting expandable particles, aging of the formed particles, and molding thereof in a pressure-resistant mold, the improvement comprising:

(a) adding said organic protective colloids to said aqueous phase;

(b) adding to said aqueous phase ions of calcium, aluminum, metals of the 1st, 2nd, or 6th through 8th side groups of the periodic table of the elements at a concentration of 1×10^{-5} to 3×10^{-2}% by mass, said metal ions comprising water-soluble, inorganic salts present as cations in the higher oxidation stage;

(c) adding said organic phase to said aqueous phase; and

(d) carrying out said polymerization.

4,609,513

BINDER COMPOSITION FOR MANUFACTURE OF FIBERBOARD

Michael G. Israel, St. Petersburg, Fla., assignor to Jim Walter Research Corp., St. Petersburg, Fla.

Filed Aug. 15, 1984, Ser. No. 641,089

Int. Cl.[4] B29J *5/02*

U.S. Cl. 264—122 23 Claims

1. In a process for the preparation of a synthetic board wherein cellulosic material is contacted with a binder and the treated material is subsequently formed into boards by the application of heat and pressure, the improvement wherein the binder comprises an organic polyisocyanate and a mixture of reactive hydrogen-containing compounds containing an average of more than one reactive hydrogen atom per molecule, said mixture comprising a member selected from the group consisting of

(a) a blend of (i) a polyester polyol and (ii) a reaction product of at least one fatty acid and at least one polyol,

(b) a reaction product of at least one polyol and at least one coreactant selected from the group consisting of carboxylic acids, carboxylic acid esters and mixtures thereof, each coreactant including at least one fatty acid,

(c) a mixture including at least one fatty acid amide, and

(d) mixtures thereof.

4,609,514

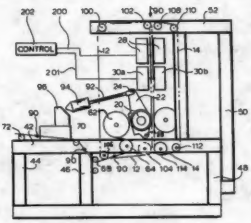
PROCESS FOR PRODUCING DECORATIVE COVERINGS FOR SUBSTRATES

Robert L. Kyle, and Donald R. Cardis, both of Munroe Falls, Ohio, assignors to Schneller, Inc., Kent, Ohio

Filed Aug. 22, 1983, Ser. No. 525,376

Int. Cl.[4] B29C *59/04*

U.S. Cl. 264—153 8 Claims



1. A method for continuously processing a thermoplastic container web to impart surface characteristics thereto, characterized by the steps of

(a) continuously and sequentially grasping each marginal edge of juxtaposed connection together elongated portions of said web to hold the web taut;

(b) rapidly exposing each said grasped elongated portion to elevated temperatures by passing in a first passing step each grasped portion through a heating zone to raise the temperature of said grasped portion of said thermoplastic containing web to the melting temperature of said thermoplastic;

(c) passing in a second passing step each grasped elongated portion from said first passing step through a cooled embossing nip having an embossing surface to impart a desired surface characteristic to that said portion of said web while simultaneously removing heat therefrom;

(d) in said second passing step, substantially simultaneously with the passage of each said elongated portion through said embossing nip, removing each grasped side edge margin of each said elongated portion and subsequently removing each grasped edge;

(e) maintaining the elongated portion in contact with the embossing surface for a substantial distance past the nip to effect a continued substantial cooling thereof while sustaining the desired surface characteristic;

(f) continuously collecting each said cooled juxtaposed connected elongated portion of said web in a wind-up zone;

wherein steps (a)–(c) are performed with the web in a vertical orientation, and moving in a downward direction.

4,609,515

METHOD OF MAKING PLASTIC FILLED WIRE ROPE

Laurence C. Smyth, Beaconsfield, Canada, assignor to Wire Rope Industries Ltd., Pointe Claire, Canada

Filed Dec. 31, 1984, Ser. No. 687,966

Claims priority, application Canada, Apr. 24, 1984, 452557

Int. Cl.[4] B29C *47/02*

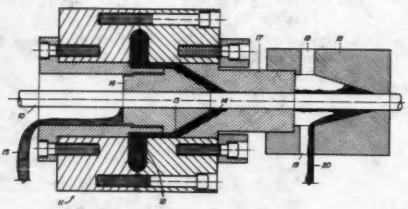
U.S. Cl. 264—174 6 Claims

1. Method of making plastic filled wire rope comprising the steps of:

(a) preheating a lubricated wire rope to a temperature close to the melting point of a plastic material with which the rope is to be filled thereby preventing freezing of the

molten plastic on the wire rope and preventing blockage of plastic flow into the rope interior, core, and strands; and

(b) injecting the plastic material in a molten state into the preheated wire rope under sufficient heat and pressure to



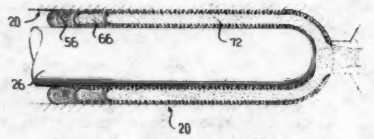
essentially completely fill all interstices disposed between strands of the rope and between individual wires within the strands and the core, while displacing and removing most of the lubricant initially present within the rope wherein said rope remains substantially unaltered throughout the preheating and injecting steps.

4,609,516

METHOD OF FORMING LAMINATED PREFORMS

Suppayan M. Krishnakumar, Nashua, and Thomas E. Nahill, Salem, both of N.H., assignors to Continental Pet Technologies, Inc., Stamford, Conn.

Filed Feb. 17, 1984, Ser. No. 581,409
Int. Cl.[4] B29C *45/16, 49/22*
U.S. Cl. 264—255 **13 Claims**



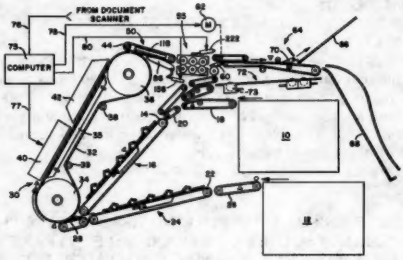
1. A method of forming laminated preforms of the type including an interior barrier layer, said method comprising the steps of providing a conventional injection mold unit for a preform wherein the injection mold unit includes a core with there being a cavity surrounding the core, providing separate supplies of at least one flowable thermoplastic resin and a flowable barrier material, injecting into that end of said mold cavity which defines a preform bottom a limited quantity of said thermoplastic resin with the surface portions of said limited quantity of thermoplastic resin cooling due to contact with said mold and said core to define first solidified layers while there is tunnel flow of the thermoplastic resin between said solidified layers, next injecting a limited quantity of said barrier material into said mold cavity behind said limited quantity of thermoplastic resin with said barrier material forcing said thermoplastic resin further into said cavity with said barrier material having tunnel flow between said thermoplastic resin solidified layers with surface portions of said barrier material in contact with said thermoplastic resin solidified layers also cooling and forming second solidified layers, and then injecting other flowable thermoplastic resin into said mold cavity behind said barrier material sufficient to complete filling of said mold cavity with said other flowable thermoplastic resin forcing said limited quantities of said thermoplastic resin and said barrier material to flow toward the other end of said mold cavity, and permitting all of the injected material to solidify.

4,609,517

SHEET FLATTENING METHOD

Gary D. Cason, Plano; John E. Dobson, Dallas; Francis P. Gunter, Plano, all of Tex.; Svetislav Mitrovich, Spokane, Wash., and Suresh C. Paranjpe, Dallas, Tex., assignors to The Mead Corporation, Dayton, Ohio

Filed Aug. 22, 1984, Ser. No. 643,211
Int. Cl.[4] B29C *55/18*
U.S. Cl. 264—291 **2 Claims**



1. A method for operating upon selected ones of a plurality of moving paper sheets for flattening of the selected sheets subsequent to the printing thereon with a liquid ink, comprising the steps of:

transporting the sheets sequentially along a transport path;

heating the selected sheets during transportation thereof along said transport path;

applying a stretching force to the selected sheets in a longitudinal direction with respect to the sheets during transportation thereof along said transport path; and

applying a stretching force to the selected sheets in a lateral direction with respect to the sheets during transportation thereof along said transport path;

said heating of the selected sheets being performed at a first predetermined location along said transport path;

said heating of the selected sheets further being performed by a heater selectively movable between a first position remote from said transport path and a second position adjacent said first predetermined location and said transport path, and wherein said heating step includes:

moving said heater from said first position to said second position prior to transporation of a selected sheet past said first predetermined location;

in the event the next succeeding sheet of the moving sheets is a selected sheet, retaining said heater in said second position; and

in the event the next succeeding sheet of the moving sheets is not a selected sheet, moving said heater from said second position to said first position.

2. A method for operating upon selected ones of a plurality of moving paper sheets for flattening of the selected sheets subsequent to the printing thereon with a liquid ink, comprising the steps of:

transporting the sheets sequentially along a transport path;

heating the selected sheets during transportation thereof along said transport path;

applying a stretching force to the selected sheets in a longitudinal direction with respect to the sheets during transportation thereof along said transport path; and

applying a stretching force to the selected sheets in a lateral direction with respect to the sheets during transportation thereof along said transport path;

said heating of the selected sheets being performed at a first predetermined location along said transport path;

said application of said longitudinal stretching force and said lateral stretching force being performed on the selected sheets simultaneously and at a second predetermined location along said transport path;

said application of said lateral stretching force to the selected sheets being performed by:

applying compressive force to the selected sheets at said second predetermined location along said transport path, and

converting said compressive force to said lateral stretching force;

said application of said compressive force to selected sheets being performed by a pair of oppositely-driven rollers disposed in selectively compressive mutual contact for movement of sheets therebetween along said transport path;

said application of said compressive force to selected sheets including:

mutually compressing said rollers to produce said compressive force therebetween prior to transportation of a selected sheet past said second predetermined location;

in the event the next succeeding sheet of the moving sheets is a selected sheet, maintaining said rollers in compression to produce said compressive force; and

in the event the next succeeding sheet of the moving sheets is not a selected sheet, relieving compression between said rollers at least partially to produce at least substantially less than said compressive force between said rollers.

4,609,518

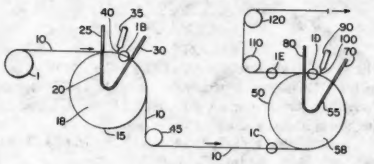
MULTI-PHASE PROCESS FOR DEBOSSING AND PERFORATING A POLYMERIC WEB TO COINCIDE WITH THE IMAGE OF ONE OR MORE THREE-DIMENSIONAL FORMING STRUCTURES

John J. Curro; James C. Baird; Donald L. Gerth, all of Cincinnati; George M. Vernon, West Chester, and E. Kelly Linman, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 31, 1985, Ser. No. 740,145

Int. Cl.[4] B29C *59/06, 69/02*

U.S. Cl. 264—504 **47 Claims**



1. A continuous, multi-phase process for debossing and perforating a substantially continuous web of substantially planar polymeric film to form a macroscopically expanded, three-dimensional, apertured polymeric web, said process comprising the steps of:

(a) continuously supporting said web of film on a forming structure exhibiting a multiplicity of fine-scale apertures which place the opposed surfaces of said forming structure in fluid communication with one another, said forming structure moving in a direction parallel to the direction of travel of said web of film and carrying said web of film in said direction;

(b) substantially continuously applying a first fluid pressure differential across the thickness of said web of film along said direction of movement of said forming structure exhibiting said fine-scale apertures, said fluid pressure differential being sufficiently great to cause said web of film to rupture in those areas coinciding with said fine-scale apertures in said forming structure;

(c) continuously supporting said finely apertured web of film on a forming structure exhibiting a macroscopic, three-dimensional, cross-section defined by a multiplicity of macroscopic cross-section apertures which place the opposed surface of said forming structure in fluid communication with one another, said forming structure moving in a direction parallel to the direction of travel of said web of film and carrying said web of film in said direction; and

(d) substantially continuously applying a second fluid pressure differential across the thickness of said web of film along said direction of movement of said forming structure, said second fluid pressure differential being sufficiently great to cause said web of film to be urged into substantial conformance with the macroscopic, three-dimensional cross-section of said forming structure while substantially maintaining the integrity of said fine-scale apertures formed by said first fluid pressure differential.

29. A continuous, multi-phase apparatus for debossing and perforating a substantially continuous web of substantially planar polymeric film to form a macroscopically expanded, three-dimensional, apertured polymeric web, said apparatus comprising:

(a) a first forming structure for continuously supporting said web of film, said first forming structure exhibiting a multiplicity of fine-scale apertures which place the opposed surfaces of said forming structure in fluid communication with one another;

(b) means for moving said first forming structure in a direction parallel to the direction of travel of said web of film;

(c) means for substantially continuously applying a first fluid pressure differential across the thickness of said web of film along said direction of movement of said first forming structure, said fluid pressure differential being sufficiently great to cause said web of film to rupture in those areas coinciding with said fine-scale apertures in said first forming structure;

(d) a second forming structure for continuously supporting said fine-scale apertured web of film, said second forming structure exhibiting a macroscopic, three-dimensional, cross-section defined by a multiplicity of macroscopic cross-section apertures which place the opposed surfaces of said second forming structure in fluid communication with one another;

(e) means for moving said second forming structure in a direction parallel to the direction of travel of said web of film; and

(f) means for substantially continuously applying a second fluid pressure differential across the thickness of said web of film along said direction of movement of said second forming structure, said second fluid pressure differential being sufficiently great to cause said web of film to be urged into substantial conformance with the macroscopic, three-dimensional cross-section of said second forming structure and to rupture said web in those areas coinciding with said macroscopic cross-section apertures in said second forming structure while substantially maintaining the integrity of said fine-scale apertures formed by said first fluid pressure differential in the areas of said web which are outside said macroscopic cross-section apertures.

4,609,519

PROCESSES FOR MAKING MOLDED COMPOSITE PANELS

Marcel Pichard, Gailleval, and Pierre Brossy, Chalon Sur Saone, both of France, assignors to Isover Saint-Gobain, Courbevoie, France

Filed Mar. 16, 1984, Ser. No. 590,481

Claims priority, application France, Mar. 17, 1983, 83 04358

Int. Cl.[4] B29C *43/20, 49/22*

U.S. Cl. 264—510 **11 Claims**

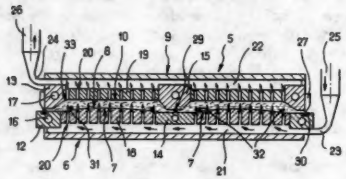
1. A one step molding process for the production of a composite panel of variable thickness comprising a fiber backing and a cover sheet, said panel having at least one area of greater thickness and one area of lesser thickness, said process comprising:

placing a stratified assembly comprising a first layer of fibers and a non-polymerized binder and a second layer compris-

ing an air permeable cover sheet thereover between a mold and mold-backing which are mutually shaped to define said areas of greater and lesser thickness;

conforming said stratified assembly to the shape of said mold or mold-backing by applying said assembly thereagainst;

blowing heated air by cross-over blowing into the assembly only in the area corresponding to said area of greater



thickness, said air being blown into said assembly from side opposite said cover sheet; thereafter

reversing the direction of said blown air, said blowing being maintained for sufficient time and at sufficient temperature to polymerize said binder; and

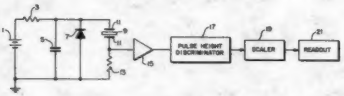
contact heating the areas of said assembly corresponding to said area of lesser thickness.

4,609,520

PROTECTION OF RADIATION DETECTORS FROM FAST NEUTRON DAMAGE

Stanley Kronenberg, Skillman, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 30, 1984, Ser. No. 575,245
Int. Cl.[4] G21C *17/00*; G01T *1/22*
U.S. Cl. 376—153 **4 Claims**



1. A device for measuring radiation emitted from a nuclear explosion, said radiation having a comparatively fast moving gamma ray component and a comparatively slower neutron component, said device comprising:

a solid state crystal radiation detector;

a voltage source applied to bias said detector; and

means responsive to said gamma ray component for removing said bias voltage for a predetermined time period whereby said crystal radiation detector is rendered less sensitive to the passage of said neutron radiation component.

4,609,521

COMPLEMENTARY SHUTDOWN DEVICE FOR AN UNDERMODERATED NUCLEAR REACTOR

Jean-Paul Millot, Elancourt; Patrice Alibran, Paris; Guy Desfontaines, Puteaux, and Dominique Hittner, Paris, all of France, assignors to Framatome & Cie, Courbevoie, France

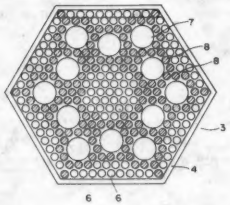
Continuation of Ser. No. 442,203, Nov. 16, 1982, abandoned.
This application Jan. 28, 1985, Ser. No. 695,415
Claims priority, application France, Dec. 4, 1981, 81 22752
Int. Cl.[4] G21C *1/00, 7/08*
U.S. Cl. 376—173 **4 Claims**

1. In an undermoderated nuclear reactor comprising a core immersed in a moderating fluid,

(a) a plurality of fissile fuel assemblies arranged side by side in upright position in said core and having a casing and a bundle of parallel elongated tubular rods grouped in said casing and containing fissile material,

(b) a plurality of fertile fuel assemblies arranged side by side in upright position around said fissile fuel assemblies in said core and having a casing and a bundle of parallel elongated tubular rods grouped in said casing and containing fertile material,

(c) wherein a first group of said fissile fuel assemblies includes a plurality of first guide tubes each substituted for one of said rods of fissile material and arranged to slidably receive control rods movable along said guide tubes for adjusting the reactivity of said core, and a second group of



said fissile fuel assemblies including a plurality of second guide tubes having a larger cross-section than said first guide tubes, each substituted for at least three of said rods of fissile material and arranged for each receiving a shutdown rod of non-fission strongly neutron-absorbing material having a cross-section approximating that of said guide tube, each said second guide tube being adjacently surrounded by at least one layer of fertile rods, and

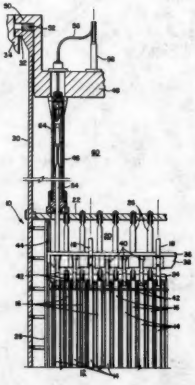
(d) means for retaining said shutdown rods above and out of said core and allowing said shutdown rods to fall into said second guide tubes into a position where they exhibit maximum neutron absorption in said core.

4,609,522

MECHANICAL DRIVE SYSTEM FOR MOVING FUEL

Albert C. Davidson, Pittsburgh, and David E. Boyle, Kiski Township, Armstrong County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 3, 1984, Ser. No. 576,677
Int. Cl.[4] G21C *7/30*
U.S. Cl. 376—212 **20 Claims**



1. A nuclear reactor, comprising:

a plurality of nuclear reactor fuel rods defining a nuclear reactor core;

zones of enriched and natural uranium fuel defined within each of said nuclear reactor fuel rods;

an upper core plate;

an auxiliary upper core plate fixedly connected to a first stationary set of said nuclear reactor fuel rods and spaced below said upper core plate so as to define a plenum chamber between said upper and auxiliary upper core plates; and

means disposed above said upper core plate and extending through said upper core plate so as to be connected to a second set of said nuclear reactor fuel rods for vertically moving said second set of said nuclear reactor fuel rods, and said zones of enriched and natural uranium fuel defined therein, relative to said first stationary set of said nuclear reactor fuel rods, and said zones of enriched and natural uranium fuel defined therein, within said nuclear reactor core and said plenum chamber during an operative fuel cycle for predeterminedly operatively interfacing said zones of enriched and natural uranium fuel defined within all of said nuclear reactor fuel rods so as to optimize the utilization of free or excess neutrons produced within said nuclear reactor core throughout said fuel cycle.

4,609,523

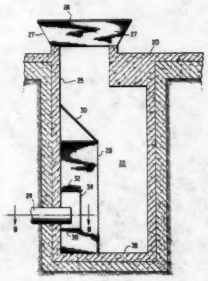
PASSIVE PH ADJUSTMENT OF NUCLEAR REACTOR CONTAINMENT FLOOD WATER

Thomas J. Gerlowski, Crafton, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 1, 1984, Ser. No. 576,060

Int. Cl.[4] G21C *19/42*

U.S. Cl. 376—309 **17 Claims**



1. A method of automatically and passively adjusting the pH of the recirculating liquid used to flood the containment structure of a nuclear reactor upon the occurrence of an accident in order to cool the reactor core, wherein the containment structure has a concrete floor which is provided with at least one sump from which the liquid is withdrawn for recirculation via at least one outlet pipe; said method comprising: prior to flooding and during or prior to normal operation of the reactor, providing at least one perforated basket within at least one sump with the basket containing crystals of a pH adjusting chemical which is soluble in the liquid, and covering each basket with a plastic coating which is likewise soluble in said liquid, whereby upon flooding of the containment structure the liquid in the sump will reach the level of the baskets, causing said coating and said crystals to be dissolved and said chemical to mix with the recirculating liquid to adjust the pH.

4,609,524

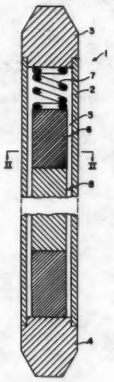
NUCLEAR REACTOR COMPONENT RODS AND METHOD OF FORMING THE SAME

Harry M. Ferrari, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 16, 1983, Ser. No. 552,227

Int. Cl.[4] G21C *3/00*

U.S. Cl. 376—417 **21 Claims**



1. In a nuclear reactor component comprising a hermetically sealed metallic tube, containing a helium atmosphere and a solid material which will release tritium into said helium atmosphere during operation of the nuclear reactor; the improvement wherein said helium atmosphere has added thereto a gas selected from the group consisting of oxygen, carbon monoxide and carbon dioxide, in a minor amount effective to form an oxide layer on the inner surface of the metallic tube, to reduce permeation of tritium through said metallic tube.

4,609,525

CADMIUM-FREE SILVER AND METAL OXIDE COMPOSITE USEFUL FOR ELECTRICAL CONTACTS AND A METHOD FOR ITS MANUFACTURE

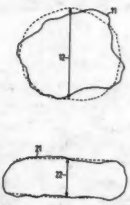
Horst Schreiner, and Bernhard Rothkegel, both of Nuremberg, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 738,894, May 29, 1985, abandoned, which is a continuation of Ser. No. 444,340, Nov. 24, 1982, abandoned. This application Nov. 15, 1985, Ser. No. 799,183

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1981, 3146972

Int. Cl.[4] B22F *3/16, 7/02*

U.S. Cl. 419—6 **8 Claims**



1. A process for preparing a composite of about 12 to 25 volume percent of a first metal oxide and about 0.1 to 2 volume percent of a second metal oxide highly dispersed in a remaining

volume percent of silver, the first oxide being selected from zinc oxide or tin oxide; and the second oxide being selected from bismuth oxide, lead oxide, copper oxide, indium oxide or a mixture of two or more of said second oxides, which comprises:

(a) atomizing a melt of an alloy of silver, first metal and second metal to form substantially spherically shaped solid alloy particles of less than 0.2 mm in diameter, the first metal being selected from zinc or tin in an amount calculated to yield said volume percent of the first metal oxide when oxidized, and the second metal being selected from bismuth, lead, copper, indium or a mixture of two or more of said second metals in an amount calculated to yield said volume percent of the second metal oxide when oxidized;

(b) milling the spherically shaped alloy particles to reduce their size and deform them into elongated, platlet shaped particles having a thickness substantially less than and a length greater than the spherically shaped alloy particle diameter;

(c) oxidizing the platlet shaped particles by heating in an oxygen containing atmosphere first at a temperature of about 673° K. to about 773° K. for about 2 to 6 hours and then at a temperature of about 873° K. to about 1073° K. for about 0.5 to 2 hours; said milling and said oxidizing in two steps producing a metal oxide-silver dispersion, in which the first and second metal oxide particles are extremely small and highly dispersed;

(d) pressing the oxidized particles to combine them into a unitary solid; and

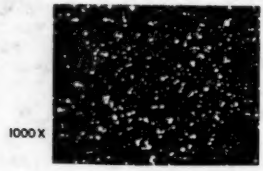
(e) sintering the unitary solid in an air-like atmosphere or a non-oxidizing atmosphere at a temperature of about 973° K. to 1173° K. for about 0.5 to 2 hours to form the composite.

4,609,526

METHOD FOR COMPACTING ALLOY POWDER

Walter T. Haswell, Jamesville, N.Y., and Charles F. Yolton, Coraopolis, Pa., assignors to Crucible Materials Corporation, Pittsburgh, Pa.

Filed May 14, 1984, Ser. No. 609,959
Int. Cl.[4] B22F *1/00*
U.S. Cl. 419—23 **9 Claims**



1. A method for producing high speed, tool and die steel articles from prealloyed, gas-atomized, substantially spherical particles of the steel from which said articles are to be made, said method comprising placing said particles in a deformable container, heating said particles within said container and passing said container with said heated particles therein along a feed path having an axis through a forging box having a plurality of hammers evenly spaced around said container and adapted to extend and retract radially with respect to said axis to impart a radial forging action to said container as said container passes through said forging box, said forging action being of a magnitude and duration to compact said particles to an essentially fully dense article.

4,609,527

POWDER CONSOLIDATION AND MACHINING

James R. Rinderle, 19 Scenery Rd., Wilkinsburg, Pa. 15221, and Michael K. Pratt, 1018 Wellington Pl., Aberdeen, N.J. 07747

Filed May 24, 1985, Ser. No. 737,540
Int. Cl.[4] B22F *1/00*
U.S. Cl. 419—32 **7 Claims**

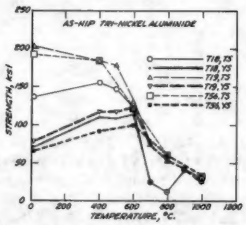
1. The process of forming machined metal parts from powder which comprises the steps of blending powder and a binder to form a mixture, shaping the mixture, heating the shape to an amount sufficient to consolidate the binder, forming the shape, extracting the binder, and then sintering the shape.

4,609,528

TRI-NICKEL ALUMINIDE COMPOSITIONS DUCTILE AT HOT-SHORT TEMPERATURES

Keh-Minn Chang, Schenectady; Shyh-Chin Huang, Latham, and Alan I. Taub, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 3, 1985, Ser. No. 783,582
Int. Cl.[4] B22F *1/02*
U.S. Cl. 419—62 **17 Claims**



1. The method of improving the intermediate temperature properties of a boron doped tri-nickel aluminide composition which comprises

forming a cobalt alloy of the aluminide according to the following expression:

$$(Ni_{1-x-z}Co_xAl_z)_{100-y}B_y$$

wherein

x is between 0.05 and 0.30

z is between 0.23 and 0.25

y is between 0.2 and 1.50 and

forming a melt of the alloy, rapidly solidifying the alloy from the melt, consolidating the alloy and cold working the consolidated alloy.

4,609,529

ZINC-BASED ALLOYS WITH IMPROVED DUCTILITY

André Skenazi, Steenokkerzeel; Dimitri Coutsouradis, Liège, and André Rasquin, Saive, all of Belgium, assignors to Centre de Recherches Metallurgiques, Brussels, Belgium

PCT No. PCT/BE84/00003, § 371 Date Oct. 11, 1984, § 102(e) Date Oct. 11, 1984
PCT Filed Feb. 8, 1984, Ser. No. 672,261
Claims priority, application Belgium, Feb. 11, 1983, 6/47.778
Int. Cl.[4] C22C *18/04*
U.S. Cl. 420—516 **9 Claims**

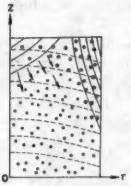
1. A zinc-based alloy consisting essentially of, based on the weight of the alloy 25% to 40% aluminum, 0.5% to 5% copper, 0.02 to 0.1% magnesium and boron being present in an amount of about 5 ppm to about 0.1 wt. %, the balance being zinc.

4,609,530

GAAS SINGLE CRYSTAL WITH SMALL FLUCTUATION IN IMPURITY CONCENTRATION IN THE PLANE PERPENDICULAR TO THE GROWTH DIRECTION OF THE CRYSTAL

Mikio Morioka, and Atsushi Shimizu, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 18, 1984, Ser. No. 682,843
Claims priority, application Japan, Dec. 23, 1983, 58-248456
Int. Cl.[4] H01L 27/00
U.S. Cl. 420—555 5 Claims



1. A GaAs single crystal containing at least one impurity selected from the group consisting of B, Si, S, Te and In in a concentration of at least $10^{15}/cm^3$, wherein fluctuation of the concentration of the impurity is not larger than 20% in a plane perpendicular to a growth direction of the single crystal.

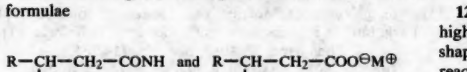
4,609,531

USE OF ALKENYLSUCCINIC ACID HALF-AMIDES AS ANTICORROSION AGENTS

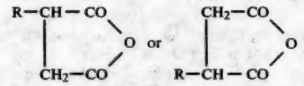
Werner Ritschel, Hofheim am Taunus, and Horst Lorke, Liederbach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 25, 1984, Ser. No. 614,452
Claims priority, application Fed. Rep. of Germany, May 27, 1983, 3319183
Int. Cl.[4] C23F 11/06; C09K 3/00
U.S. Cl. 422—13 2 Claims

1. A method for inhibiting corrosion caused by an aqueous medium comprising the step of adding to the aqueous medium as an anticorrosion agent an alkenylsuccinic acid half-amide of the formulae



in which R denotes C_6–C_{12}-alkenyl and M denotes a proton or an ammonium ion of the formula $NHR_1R_2R_3$ and R_1, R_2 and R_3 are identical or different and denote hydrogen, C_1–C_{12}-alkyl, 2-hydroxyethyl or 2-hydroxypropyl, said half-amide obtained by reacting 1 mole of an alkenylsuccinic anhydride of the formula



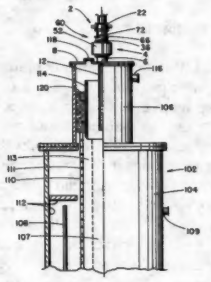
with at least two moles of ammonia at a temperature of from 0° to 5° C. and converting the ammonium salt thus obtained into different salts under the meaning of $M^{\oplus}$ if $M^{\oplus}$ does not represent an ammonium ion, and at a pH of a 1 percent solution in distilled water.

4,609,532

REACTOR FEED TUBE ADJUSTABLE MOUNTING ASSEMBLY AND METHOD

Dale E. Schramm, and Oscar T. Scott, IV, both of Borger, Tex., assignors to J. M. Huber Corporation, Locust, N.J.

Filed Sep. 5, 1984, Ser. No. 647,948
Int. Cl.[4] B01J 1/00
U.S. Cl. 422—145 20 Claims



1. An adjustable feed tube mounting assembly for mounting a feed tube of a high-temperature chemical reactor with the feed tube positioned and oriented to discharge feed material into a reactor tube, the mounting assembly comprising:

a pivot seat member adapted to be fixed to said reactor and having a seat opening for receiving a portion of said feed tube and for accommodating pivotable displacement of said feed tube;

a feed tube support in engagement with said feed tube and having a support bearing surface for engagement with said seat member and a support opening for receiving a portion of said feed tube;

said pivot seat member having a seat bearing surface in engagement with said support bearing surface for permitting pivotable adjustment of said feed tube support relative to said pivot seat member sufficient for minimizing impingement of said feed material discharged from said feed tube on an inner surface of said reactor tube; and

a retainer for permitting said feed tube support to be pivoted during operation of said reactor in a selected orientation while in an unlocked state and to be fixed with respect to said pivot seat member while in a locked state.

12. A method for reducing undesirable conditions within a high-temperature fluid-wall reactor having a cylindrical-shaped reactor tube, a feed tube for inputting reactants into a reaction zone spaced interiorly of said reaction tube, means for heating said reaction tube to incandescence for emitting radiation radially inward to said reaction zone for sustaining a desired chemical reaction, and means for passing gas through said reaction tube for forming a protective fluid wall for the inner surface of said reactor tube, the method comprising the steps of:

(a) pivotably supporting said feed tube relative to said reactor with a pivot mounting assembly;

(b) selectively fixing the orientation of said feed tube relative to said reactor;

(c) thereafter detecting an undesirable reactor operating condition;

(d) thereafter pivotably adjusting the orientation of said feed tube in response to said detected condition sufficient for minimizing impingement of feed material discharged from said feed tube on an inner surface of said reactor tube while said reactor is operating; and

(e) thereafter refixing the orientation of said feed tube relative to said reactor.

4,609,533

PROCESS FOR SELECTIVE SEPARATION OF PLUTONIUM FROM URANIUM AND OTHER METALS

Klaüs Heckmann, and Jiri Spurny, both of Regensburg, Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Division of Ser. No. 509,193, Jun. 29, 1983. This application Dec. 10, 1984, Ser. No. 680,188

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, 32248034

Int. Cl.[4] C01G *56/00*

U.S. Cl. 423—18 7 Claims

1. A process for selectively separating plutonium an uranium comprising: a first, reduction, step; and a second, oxidation, step, said first step including: adding to a solution containing Pu^{4+} and UO_2^{2+} such an amount of sulfuric acid that Pu^{4+} and UO_2^{2+} form anionic sulfato-complexes, introducing a reducing agent in an amount sufficient to reduce Pu^{4+} present to Pu^{3+}, adding a cationic compound containing at least one group adapted to assert affinity to polar surfaces and also containing a radical which has little affinity to water, separating the resultant, first, precipitate from its mother liquor, and recovering the uranium from said first precipitate; and said second step including: adding, after separating the uranium-containing precipitate, to remaining mother liquor such an effective amount of an oxidizing agent that Pu^{3+} is re-oxidized, introducing a further amount of said cationic compound, separating the resultant, second, precipitate, and recovering plutonium from said second precipitate.

4,609,534

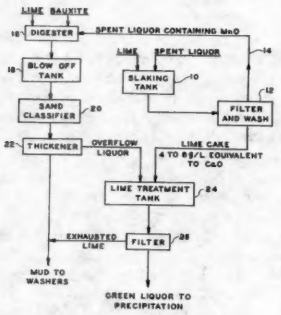
LIME CLEANING PROCESS TO REMOVE MANGANESE OXIDE

Paul J. The, Murrysville, Pa., and William V. Felix, Little Rock, Ark., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 9, 1984, Ser. No. 658,649

Int. Cl.[4] C01G *45/10*

U.S. Cl. 423—49 18 Claims



1. A process for removing manganese oxide from lime comprising

leaching the manganese oxide from the lime with sodium aluminate liquor produced by the Bayer process to form a slurry containing said manganese oxide and leached lime; and

removing the leached lime from the slurry containing manganese oxide.

17. A process for the production of alumina from sodium aluminate liquor resulting from caustic leaching of an alumina-bearing source material comprising

(a) heating said sodium aluminate liquor;

(b) digesting the heated sodium aluminate liquor under pressure;

(c) gradually bringing the sodium aluminate liquor back to atmospheric pressure;

(d) reducing the iron content of the sodium aluminate liquor by adding lime to the sodium aluminate liquor after said sodium aluminate liquor has been brought back to atmospheric pressure, said lime having been leached with spent Bayer liquor to remove manganese oxide therefrom prior to being added to said sodium aluminate liquor, said lime also having contained at least 0.27 weight percent manganese oxide prior to said leaching;

(e) separating solids from the sodium aluminate liquor after bringing said sodium aluminate liquor back to atmospheric pressure; and

(f) precipitating aluminum trihydroxide from the separated sodium aluminate liquor.

4,609,535

EXTRACTING SOLUBLE PHOSPHATES FROM NATURALLY OCCURRING IRON AND ALUMINIUM PHOSPHATES USING SOLUTIONS OF ALKALI METAL CARBONATES AND HYDROXIDES

Griffith Thomas, 81 Lynbara Ave., St. Ives, New South Wales, Australia (2075)

Filed Aug. 1, 1984, Ser. No. 636,601

Claims priority, application Australia, Aug. 4, 1983, PG0662

Int. Cl.[4] C01B *25/16*

U.S. Cl. 423—167 8 Claims

1. A process for production of alkali metal phosphates from naturally occurring phosphate rock which has not been chemically treated to extract phosphates, the phosphate content of the rock being predominantly iron phosphates and aluminum phosphates, the process comprising leaching the phosphate rock with alkali metal carbonate solution to produce a leachate containing dissolved alkali metal phosphates, separating the leachate from undissolved residual solids and recovering the alkali metal phosphates from the leachate.

4,609,536

METHOD FOR PRODUCING REACTIVE LIME AND REDUCING SULFUR DIOXIDE

Heeyoung Yoon, McMurray, and Francis P. Burke, Bethel Park, both of Pa., assignors to Conoco Inc., Wilmington, Del.

Filed Mar. 22, 1985, Ser. No. 714,754

Int. Cl.[4] B01J *8/00;* C01B *17/00, 13/14;* C01F *5/02*

U.S. Cl. 423—244 4 Claims

1. The method of reducing the sulfur dioxide content of flue gas which comprises:

(a) passing a finely divided limestone-containing solid to a suspension zone;

(b) providing an oxygen-containing gas and a low-carbon fuel gas having a carbon to hydrogen weight ratio of at most 3.1:1 respectively to said suspension zone at a velocity sufficient to suspend the solids in said zone;

(c) burning said fuel gas with said oxygen-containing gas to generate heat in said suspension zone;

(d) withdrawing from said suspension zone solids having a temperature of at least about 700° C.;

(e) transporting the withdrawn solids as a suspension in the hot combustion product gases of said burning;

(f) injecting the thus-transported solids into the flue gas containing sulfur dioxide; and

(g) separating from the resulting mixture of gases a solid containing calcium sulfite and calcium sulfate.

4,609,537

PROCESS FOR SIMULTANEOUSLY REMOVING NITROGEN OXIDES, SULFUR OXIDES, AND PARTICULATES

Thomas W. Tolpin, Highland Park, and Richard A. Kretchmer, Clarendon Hills, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 13, 1984, Ser. No. 640,675

The portion of the term of this patent subsequent to Sep. 2, 2003, has been disclaimed.

Int. Cl.[4] B01J *8/00;* C01B *17/00, 21/00;* C10G *11/02*

U.S. Cl. 423—244 31 Claims

1. A gas purification process, comprising the steps of:

cracking a hydrocarbon feedstock in a reactor of a catalytic cracking unit in the presence of a cracking catalyst under catalytic cracking conditions to produce an upgraded cracked product leaving spent cracking catalyst;

regenerating said spent cracking catalyst in a regenerator;

emitting particulate-laden regenerator off-gases comprising nitrogen oxides, suflur oxides, and cracking catalyst particulates from said regenerator;

passing said regenerator off-gases and a nitrogen oxide-capturing reducing agent generally downwardly together through a substantially vertical conduit of a granular bed filter and scrubber, and thereafter, through at least a portion of a downwardly moving bed of sulfur oxide-capturing and pariticulate-removing material to remove a substantial portion of said cracking catalyst particulates, nitrogen oxides, and sulfur oxides from said regenerator off-gases so as to produce molecular nitrogen and substantially purified gases having a substantially lower concentration of nitrogen oxides, sulfur oxides, and cracking catalyst particulates than said regenerator off-gases and leaving spent sulfur oxide-capturing and particulate-removing material with said cracking catalyst particulates and sulfur-containing deposits thereon selected from the group consisting of sulfur oxides, sulfates, and combinations thereof;

removing said spent material from said granular bed filter and scrubber and feeding said removed material to a generally upright lift pipe riser having an overhead collection vessel;

regenerating said spent sulfur oxide-capturing and particulate-removing material in said lift pipe riser while simultaneously moving said spent sulfur oxide-capturing and particulate-removing material substantially upwardly through said lift pipe riser to substantially remove said cracking catalyst particules and said sulfur-containing deposits from said spent sulfur oxide-capturing and particulare-removing material while emitting effluent gases containing said removed particulates and sulfur-containing gases selected from the group consisting of hydrogen sulfide, sulfur oxides, and combinations thereof, liberated from said sulfur-containing deposits;

feeding said regenerated sulfur oxide-capturing and particulate-removing material directly to said granular bed filter and scrubber from said lift pipe riser for use as part of said downwardly moving bed;

removing a substantial portion of said particulates from said effluent gases in at least one cyclone;

recovering elemental sulfur from said sulfur-containing gases in said effluent gases from said lift pipe riser in a sulfur recovery unit;

said sulfur oxide-capturing and particulate-removing material being selected from the group consisting essentially of absorbers and adsorbers with at least one promoter thereon, said adsorbers comprising an oxide of at least one metal selected from the group consisting of aluminum, bismuth, manganese, yttrium, antimony, copper, tin, rare earth metals, Group 1*a* metals, and Group 2*a* metals, and said promoter comprising at least one member, in a free or combined form, selected from the group consisting of rare earth metals, Group 8 nobel metals, chromium, vanadium, rhenium, antimony, silver, and combinations thereof; and

at least 90% by weight of said sulfur oxides in said regenerator off-gases are removed by said bed.

4,609,538

SCRAP HEATING METHOD

Sabro Sugiura; Kiyohide Hayashi, both of Nagoya; Kenji Kanada, Chita; Noboru Demukai, Kaizu, and Tetsuo Okamoto, Chita, all of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya, Japan

Filed Feb. 20, 1985, Ser. No. 703,363

Claims priority, application Japan, Feb. 23, 1984, 59-33243

Int. Cl.[4] B01J *8/00;* C01B *17/00;* C22B *1/248*

U.S. Cl. 423—244 3 Claims

1. A method of melting scrap and simultaneously forming a slag, comprising:

(a) subjecting scrap to heat generated by the combustion of a sulfur-containing fuel, in a heating container,

(b) injecting at least one material selected from CaO, $Ca(OH)_2$, or $CACO_3$, directly into the heating container in the area where the combustion of the sulfur-containing fuel is occurring so as to fix the sulfur oxides generated during the combustion mainly as $CaSO_4$, thereby desulfurizing the exhaust gas produced from the combustion and simultaneously forming a slag.

4,609,539

PROCESS FOR SIMULTANEOUSLY REMOVING SULFUR OXIDES AND PARTICULATES

Carl J. Horecky, Elmhurst, and Eugene H. Hirschberg, Park Forest, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 13, 1984, Ser. No. 640,679

Int. Cl.[4] B01J *8/00;* C01B *17/00, 21/02;* C10G *11/02*

U.S. Cl. 423—244 17 Claims

1. A gas purification process, comprising the steps of:

withdrawing a particulate-laden gaseous stream comprising particulates and sulfur oxides from a combustor of a processing unit selected from the group consisting of a catalytic cracking unit, a synthetic fuels plant, a coal liquefaction plant, a gasification plant, a power plant, a paper mill, a steel mill, and a waste treatment facility;

removing large gross particulates from said particulate-laden gaseous stream in at least one cyclone by passing said particulate-laden gaseous stream through at least one cyclone;

feeding said particulate-laden gaseous stream to a vessel after said particulate-laden gaseous stream has been passed through at least one cyclone, said vessel having a bed of sulfur oxide-capturing and particulate-removing material comprising at least one member selected from the group consisting of adsorbers and adsorbers with at least one promoter thereon, said adsorbers substantially comprising an oxide of at least one metal selected from the group consisting of aluminum, bismuth, manganese, yttrium, antimony, tin, a rare earth metal, a Group 1a metal, and a Group 2a metal, and said promoter selected from the group consisting essentially of a rare earth metal, a Group 8 metal, chromium, vanadium, rhenium, and combinations thereof;

substantially decreasing the concentration of both particulates and sulfur oxides in said particulate-laden gaseous stream in said vessel; and

said decreasing comprising simultaneously removing a substantial portion of said particulates and a substantial portion of said sulfur oxides from said particulate-laden gaseous stream by passing said particulate-laden gaseous stream through a portion of said bed of sulfur oxide-capturing and particulate-removing material in said vessel.

4,609,540

PROCESS FOR PRODUCING CARBON FIBERS

Jinko Izumi; Yoshitaka Imai; Munetsugu Nakatani; Yoshiteru Tanuku, and Naoyuki Fukahori, all of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed May 14, 1985, Ser. No. 733,797

Claims priority, application Japan, May 18, 1984, 59-99757; May 18, 1984, 59-99758

Int. Cl.[4] D01F *9/22*

U.S. Cl. 423—447.6 6 Claims

1. A process for producing a carbon fiber which comprises subjecting a polyacrylonitrile-type polymer fiber to a flame-resisting treatment in a flame-resisting treatment furnace provided with a plural number of driving rolls in an oxidizing atmosphere at 200° to 400° C. under application of multistep elongation, during said treatment the respective percentage of elongation in each step the elongation being set respectively at a value which is equal to or within ±3% of the value of the precentage of elongation, En, indicating an inflection point, Pn, obtainable from a plot of the percentage of elongation versus the load, and then subjecting the treated fiber to carbonization.

4,609,541

METHOD OF PROCESSING COAL GAS

Albert Calderon, 1065 Melrose St., Bowling Green, Ohio 43402

Filed Mar. 13, 1985, Ser. No. 711,241

Int. Cl.[4] B01D *53/34;* C01B *17/04*

U.S. Cl. 423—569 10 Claims

1. A method of processing a gas containing a compound of sulfur and hydrocarbon material, comprising a first step of directing the gas through a fixed bed of hot lime material whose temperature is maintained above the cracking temperature of the hydrocarbon material to simultaneously (i) react the compound of sulfur with the hot lime to produce calcium sulfide in the fixed bed and (ii) crack the hydrocarbon material while impregnating the calcium sulfide with carbon in the same fixed bed, and a second step of reacting the carbon impregnated calcium sulfide with a gas containing oxygen in order to (i) convert said calcium sulfide back to hot lime through regeneration and (ii) produce elemental sulfur.

4,609,542

NEW PHARMACEUTICAL FORMS FOR ADMINISTRATION OF MEDICAMENTS BY ORAL ROUTE, WITH PROGRAMMED RELEASE

Donald E. Panoz, Dublin, Ireland, and Gilbert Corneille, Paris, France, assignors to Elan Corporation, P.L.C., Athlone, Ireland

Continuation of Ser. No. 434,269, Sep. 30, 1982, abandoned, which is a continuation of Ser. No. 104,985, Dec. 18, 1979, abandoned. This application Jul. 1, 1985, Ser. No. 750,980

Claims priority, application France, Dec. 22, 1978, 78 36084; Apr. 2, 1979, 79 08180; Apr. 2, 1979, 79 08181; Dec. 7, 1979, 79 30041

Int. Cl.[4] A61K *9/22, 9/24, 9/26, 31/43*

U.S. Cl. 424—19 2 Claims

1. A new pharmaceutical form of medicament for oral administration with selectively adjustable programmed release and controlled absorption, comprising:

(a) granulated highly compressed pulverized particles obtained by high to very high compression at a pressure equal to 15 tons and thereafter grinding said particles having a diameter between 0.2 and 2 mm, of an active ingredient comprising potassium phenoxymethylpenicillin with an active excipient containing a physiologically active neutralization agent for controlling the pH, said neutralization agent comprising sodium citrate;

(b) granulated highly compressed pulverized particles obtained by high to a very high compression at a pressure of 15 tons and thereafter grinding said particles having a diameter between 0.2 and 2 mm, containing an active ingredient comprising potassium phenoxymethylpenicillin coated with an excipient determining the slow penetration of the digestive and alimentary liquids, said excipient including polyvinyl-acetate-phthalate;

(c) granulated highly compressed pulverized particles containing an active ingredient comprising potassium phenoxymethylpenicillin, obtained by high to very high compression at a pressure of 15 tons and thereafter grinding said particles having a diameter between 0.2 and 2 mm, coated with a very thin layer of lipids, compressing cholesteryl acetatechloroform in a ratio of 1:2 (weight:volume), said lipids being present at a rate of 5 to 30% in relation to the active ingredients, the proportions by weight of each of particles (a), (b) and (c) being 1:1:1.

4,609,543

SOFT HOMOGENEOUS ANTACID TABLET

William M. Morris, Rancho Palos Verdes, Calif.; Frank Witzel, Saratoga Springs, N.Y.; Wayne J. Puglia, Bayville, N.Y.; Donald A. M. Mackay, Pleasantville, N.Y.; K. Warren Clark, Brewster, N.Y., and Kanit J. Patanasinth, Jamesburg, N.Y., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Division of Ser. No. 551,383, Nov. 4, 1983, and a continuation-in-part of Ser. No. 341,967, Jan. 22, 1982, abandoned, which is a continuation of Ser. No. 175,179, Aug. 4, 1980, abandoned. This application Mar. 18, 1985, Ser. No. 712,830

Int. Cl.[4] A61K *9/42, 33/06, 33/08, 33/10*

U.S. Cl. 424—38 14 Claims

1. An antacid tablet formed by first coating particles of antacid with a coating composition and then tableting the coated particles and wherein said antacid particles having a primary particle size of less than about 100 millimicrons and said coating composition comprises fatty material or oil, surfactant and flavorant selected from the group consisting of chocolate, mint-chocolate, butter vanilla, butter fat and mint flavors, said fatty material or oil being present in said coating composition in an amount of from about 25 to 45% by weight, and the bulk density of said antacid particles being essentially increased during the coating thereof with said coating composition by intensively mixing said antacid particles by mulling or milling so as to provide for the removal of air between said antacid particles and for the homogeneous coating of said antacid particles with said coating composition,

said tablet, when exposed to saliva in the mouth of the user thereof, readily melts away and disintegrates to a smooth creamy pleasant tasting emulsion or colloidal suspension devoid of grittiness and which affords maximum surface contact of said particles of antacid and thus allows said antacid, when swallowed, to function as a fast acting liquid antacid in the stomach of the user thereof.

4,609,544

PROCESS FOR TANNING THE SKIN

Walter C. Herlihy, Cambridge, Mass., assignor to Repligen Corporation, Cambridge, Mass.

Filed Jul. 5, 1983, Ser. No. 510,776

Int. Cl.[4] A61K *7/42, 7/44, 7/021*

U.S. Cl. 424—59 4 Claims

1. A method of tanning the human epidermis which comprises applying to said epidermis a composition comprising a cosmetic base in the form of a lotion, a cream, or an ointment, an effective amount of a dye precursor selected from the group consisting of tyrosine, 3,4-dihydroxy phenylalanine (dopa), D-dopa, aniline, catechol, 5-hydroxyindole, tyramine, dopamine, m-aminophenol, o-aminophenol, p-aminophenol, 4-aminocatechol, 2-hydroxy-1,4-naphthaquinone (henna), 4-methyl catechol, 3l-methyl catechol, 3-isopropyl 6-methyl catechol, 3,4-dihydroxybenzylamine, 3,4-dihydroxybenzoic acid, 1,2-dihydroxynaphthalene, gallic acid, resorcinol, 2-chloroaniline, p-chloroanisole, 2-amino-p-cresol, 4,5-dihydroxynaphthalene 2,7-disulfonic acid, o-cresol, m-cresol, p-cresol,

distributed through said base, an effective amount of peroxidase and H_2O_2.

4,609,545

COMPRESSING AID FOR COMPRESSING POWDERS

Mitchell L. Schlossman, 20 Lakeshore Dr., Rockaway, N.J. 07886

Continuation-in-part of Ser. No. 444,451, Nov. 24, 1982. This application Oct. 7, 1983, Ser. No. 539,838

Int. Cl.[4] A61K *7/021, 7/035;* C08J *3/02*

U.S. Cl. 424—63 5 Claims

1. In a compressed product for personal use comprising powdery ingredients, the improvement which comprises the combination of said powdery ingredients with an effective amount of compressing aid consisting of particles of a Fischer-Tropsch, synthetic saturated hydrocarbon wax having an average molecular formula of $C_{48}H_{98}$, an average molecular mass of about 700, a minimum congealing point of about 204° F., and an average particle size of about 10 microns, said wax being coated with from about 0.1 to 2.0% by weight, based on the weight of the wax, of a lubricant which comprises at least one vegetable protein.

4,609,546

LONG-ACTING COMPOSITION

Hajime Hiratani, Sennan, Japan, assignor to Japan Chemical Research Co., Ltd., Kobe, Japan

Filed Jun. 23, 1983, Ser. No. 507,154

Claims priority, application Japan, Jun. 24, 1982, 57-108851; Sep. 27, 1982, 57-169160

Int. Cl.[4] A61K *31/745, 39/00;* C07K *15/00*

U.S. Cl. 424—83 15 Claims

1. A long-acting composition which comprises a physiologically active polypeptide or glycoprotein of human origin coupled to a polyoxyethylene-polyoxypropylene copolymer having a molecular weight between about 1,000 and about 10,000 by means of a coupling agent capable of linking the terminal hydroxyl group of said copolymer with the amino group of said active substance.

4,609,547

ANTI-ALLERGIC COMPOSITIONS AND THEIR USE

Andrew J. Garman, Betchworth, and Alan Wheeler, South Holmwood, both of England, assignors to Beecham Group p.l.c., England

Continuation of Ser. No. 254,373, Apr. 15, 1981, abandoned. This application Apr. 26, 1984, Ser. No. 603,666

Claims priority, application United Kingdom, Apr. 15, 1980, 8012294

Int. Cl.[4] A61K *39/385, 39/36*

U.S. Cl. 424—88 15 Claims

1. A pharmaceutical composition for anti-allergy therapy comprising an anti-allergic amount of a material which comprises

(1) an allergen or allergen extract,

(2) polysarcosine of a number average molecular weight from 2,000 to 12,000, and

(3) a chemical linking group linking a reactive site on the polysarcosine to an amino group on the allergen or allergen extract,

together with a pharmaceutically acceptable carrier.

4,609,548

VACCINES FOR PSEUDORABIES DISEASE AND METHODS FOR USE OF SAME

Malon Kit, and Saul Kit, both of Houston, Tex., assignors to Novagene, Ltd. and Baylor College of Medicine, both of Houston, Tex.

Division of Ser. No. 567,018, Dec. 30, 1983, Pat. No. 4,514,497. This application Dec. 20, 1984, Ser. No. 684,303

Int. Cl.[4] A61K *39/205*

U.S. Cl. 424—89 126 Claims

1. A modified live virus vaccine for pseudorabies disease comprising:

(1) pharmaceutically effective amount of a temperature-resistant pseudorabies virus which fails to produce any functional TK as a result of mutagen-induced mutation; and

(2) a pharmaceutically acceptable carrier or diluent.

4,609,549

BIOLOGICALLY ACTIVE SUBSTANCE FROM ISLETS-ACTIVATING PROTEIN

Katsumi Nogimori; Makoto Tamura; Shigeki Kurokawa, and Motoyuki Yajima, all of Ohtsu, Japan, assignors to Kaken Pharmaceutical Co., Ltd., Tokyo, Japan

Filed May 3, 1984, Ser. No. 606,479

Claims priority, application Japan, May 11, 1983, 58-82363

Int. Cl.[4] C07K *15/04;* A61K *37/02, 39/10, 37/43*

U.S. Cl. 424—92 11 Claims

1. A biological active substance obtained by reacting Islets-Activating Protein which has been isolated from a culture of a bacterial strain of *Bordetella pertussis* (Phase I or II), which has the following properties:

(1) a molecular weight of 73,000±11,000 as determined by the gel-filtration method;

(2) a protein content of not less than 95% by weight as determined by Lowry's method;

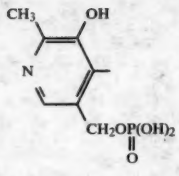
(3) the amino acid composition of the protein moiety thereof (average ratio, μm/100μM), comprising from 7.5 to 7.9 of aspartic acid, from 6.8to 7.8 of threonine, from 5.9 to 7.6 of serine, from 8.8 to 10.0 of glutamic acid, from 5.5 to 6.4 of proline, from 8.7 to 9.6 glycine, from 9.to 10.8 of alanine, from 1.0 to 2.5 of cystine/2, from 6 to 5 to 7.6 of valine, from 2.5 to 3.3 of methionine, from 3.6 to 4.6 of isoleucine, from 7.4 to 8.7 of leucine, from 5.1 to 6.8 of tyrosine, from 3.7 to 4.5 of phenylalanine, from 3.1 to 4.4 of lysine, from 0.9 to 1.5 of histidine and from 6.1 to 6.6 arginine;

(4) an isoelectric point of a pH of 8.9±0.5; and

(5) an optical rotation, $[\alpha]_D^{25}$, of $-29\pm5°$, and which shows (I) a very sharp single band on the cathode side in the disc-electrophoretogram with 7.5% by weight of polyacrylamide gel containing 1N potassium hydroxide-glacial acetic acid buffer solution of a pH of 4.3 and (II) a hydroxyapatite column-chromatographic pattern in which the said protein is eluted with an aqueous 0.1M phosphate buffer solution of a pH of 7.0 containing 0.5M of sodium chloride,

with a carbonyl compound of formula (I):

wherein R^1 is a hydrogen atom, a methyl group or a group represented by the formula:



and R^2 is a hydrogen atom or an alkyl group of 1 to 3 carbon atoms in the presence of a reducing agent.

4,609,550

BACILLUS CEREUS* SUBSPECIES *ISRAELENSIS

Philip C. Fitz-James, London, Canada, assignor to The University of Western Ontario, Health Sciences Centre, London, Canada

Filed Jan. 20, 1983, Ser. No. 459,596

Claims priority, application Canada, Jul. 9, 1982, 407032

Int. Cl.[4] C12N *1/06, 15/00, 3/00, 1/20;* **C12R** *1/085;* **A01C** *1/00;* **A01N** *63/00*

U.S. Cl. 424—93 **19 Claims**

1. A biologically pure mutant of *Bacillus cereus* subspecies *israelensis* which is substantially non-spore-forming and which is selected from the group consisting of mutants bearing deposit numbers 1178, 1179 and 1180 with the culture collection of the University of Western Ontario, London, Ontario, Canada.

4,609,551

PROCESS OF AND MATERIAL FOR STIMULATING GROWTH OF CARTILAGE AND BONY TISSUE AT ANATOMICAL SITES

Arnold Caplan, 1300 Oakridge Dr., Cleveland Heights, Ohio 44121, and Glenn T. Syftestad, 3660 Warrensville Center Rd. #101, Shaker Heights, Ohio 44122

Filed Mar. 20, 1984, Ser. No. 591,440

Int. Cl.[4] A61K *35/32;* **A61F** *2/28*

U.S. Cl. 424—95 **17 Claims**

1. In a method of stimulating in vivo growth of skeletal tissue the improvement comprising the steps of combining soluble bone protein purified to a state effective to initiate chondrogenesis with fibroblast cells to form a protein-cell combination and placing the protein-cell combination in condition for in vivo administration.

6. In a method of stimulating in vivo growth of skeletal tissue the improvement comprising the steps of combining soluble bone protein purified to a state effective to initiate chondrogenesis with fibroblast cells to form a protein-cell combination, and further combining the protein-cell combination with a biodegradable carrier to form a composite mass.

17. A method of stimulating in vivo growth of skeletal tissue at a site of a joint cavity articular comprising the steps of:

contacting fibroblast cells with soluble bone protein purified to a state effective to initiate chondrogenesis;

combining the cells with an injectable solution; and

injecting the cells intra-articularly.

4,609,552

METHOD FOR TERMINATING PREGNANCY

Emanuel Revici, New York, N.Y., assignor to Elena Avram, New York, N.Y.

Continuation-in-part of Ser. No. 487,900, Apr. 22, 1983, abandoned. This application Apr. 12, 1985, Ser. No. 722,900

Int. Cl.[4] A61K *33/04*

U.S. Cl. 424—164 **6 Claims**

1. A method for terminating a pregnancy in a body which comprises internally administering to the body a reaction product produced by heating an oil containing at least one fatty acid or fatty ester having an allylic unsaturation of the type —CH=CH—CH_2—CH=CH—and/or —CH=CH—CH=CH—CH_2- and thiopropanediol, dithiopropanediol, dithiopropanol, ethyl sulfide, ethylene sulfide or colloidal sulfur at a temperature above about 110° C. for a sufficient period time to incorporate at least 0.1% of sulfur into the allylically unsaturated oil.

2. A method for terminating a pregnancy in a body which comprises internally administering to the body a reaction product produced by heating an oil containing at least one fatty acid or fatty ester having an allylic unsaturation of the type —CH=CH—CH_2—CH=CH—and/or —CH=CH—CH=CH—CH_2- and elemental sulfur at a temperature above about 110° C. for a sufficient period of time to incorporate at least 0.1% of sulfur into the allylically unsaturated oil.

4,609,553

METHOD OF PRODUCING SOFT CHEESE

Ulrich Zboralski, Offenbach-Buergel, and Karlheinz Dorn, Budenheim, both of Fed. Rep. of Germany, assignors to Chemische Fabrik Budenheim, Rudolf A. Oetker, Budenheim, Fed. Rep. of Germany

Filed Jan. 9, 1985, Ser. No. 690,053

Claims priority, application Fed. Rep. of Germany, May 19, 1984, 3418792

Int. Cl.[4] A23C *19/064, 19/076*

U.S. Cl. 426—36 **5 Claims**

1. A method of producing soft cheese by treating cheese with smelt salt wherein the smelt salt comprises an insoluble calcium phosphate having a CaO/P_2O_5 ratio from 2.5:1 to 3.1:1 and a beta-tricalcium phosphate content from 50 to 100 percent.

4,609,554

ASEPTIC YOGHURT

Nripen N. Barua, Ajax, and Richard J. Hampton, Howick, both of Canada, assignors to Ault Foods Limited, Scarborough, Canada

Continuation of Ser. No. 582,875, Feb. 16, 1984, abandoned, which is a continuation of Ser. No. 347,961, Feb. 11, 1982, abandoned. This application Jul. 17, 1985, Ser. No. 755,558

Int. Cl.[4] A23C *9/137*

U.S. Cl. 426—43 **24 Claims**

1. A process for the production of an aseptic yoghurt comprising:

(a) maintaining a fluid milk substrate at a pasteurization temperature for a period of time sufficient to effect pasteurization;

(b) cooling the pasteurized substrate to an incubation temperature of from about 100° F. to about 115° F.;

(c) subsequently innoculating said substrate with a yoghurt culture producing lactic acid and incubating same at said incubation temperature until the pH is reduced to between about 4.5 and about 4.0, whereby a yoghurt base is produced;

(d) producing a natural yoghurt by admixing with said yoghurt base, while the temperature thereof is initially greater than 100° F. and before the temperature thereof falls below 85° F., the following components:

carrageenan:	from about 1% to about 0.8%;
citrate ion:	from about 0.05% to about 0.2%;
starch:	from about 0.5% to about 1.5%;
water:	in an amount such that the milk solids content of the total mixture is from about 10% to about 15%;

all percentages being by weight based on the weight of the total admixture;

(e) preconditioning the natural yoghurt whilst substantially avoiding gelatinization of the starch by treating the natural yoghurt by a process selected from the group consisting of:

(i) raising the temperature of the natural yoghurt without interruption from the incubation temperature over a period of from about 0.5 to about 5.0 minutes, with the addition of the components of step (d) being completed before the temperature of the natural yoghurt reaches a temperature of about 145° F.; and,

(ii) raising the natural yoghurt to a temperature of from about 140° F. to about 160° F. and maintaining that temperature for a period of from 5 to 20 minutes;

(f) effecting single state homogenization of the mixture at a homogenization temperature of at least 140° F. up to about 170° F. and at a pressure of from about 500 to about 1500 psi;

(g) pasteurizing the resulting mixture at a temperature of at least 170° F. to produce an aseptic yoghurt; and

(h) cooling the aseptic yoghurt so produced to a temperature of less than 85° F.

4,609,555

TOPICAL FLAVORING COMPOSITION FOR BAKED PRODUCTS

Michael G. Becher, Flower Mound, and Victor H. Ke, Grand Prairie, both of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

Filed Feb. 21, 1985, Ser. No. 703,985

Int. Cl.[4] A21D *13/00*

U.S. Cl. 426—94 **28 Claims**

1. A flavoring composition for topical prebake application to a baked dough product in the form of discrete particles produced by the process which comprises mixing from about 7 weight percent to about 17 weight percent of a comminuted, baked dough product, from about 10 weight percent to about 20 weight percent of a low bulk density oil absorbing starch hydrolysate, and from about 5 weight percent to about 50 weight percent flour to produce a dry ingredient mixture; mixing the dry ingredient mixture with from about 7 weight percent to about 12 weight percent of a first melted fat having a Wiley melting point below about 120° F.; mixing from about 4 weight percent to about 10 weight percent water with the dry ingredient mixture and first melted fat; mixing from about 2 weight percent to about 10 weight percent of a second melted fat having a Wiley melting point above about 124° F. with the water, first melted fat and dry ingredient mixture while maintaining the temperature of the first fat below its melting point; and mixing from about 5 weight percent to about 50 weight percent of at least one flavoring agent with the ingredients in one or more of the other mixing steps, the weight percentages being based on total weight of the composition.

4,609,556

FILTER-BAGS FOR MEDICINAL AND AROMATIC INFUSIONS, METHOD AND APPARATUS

Nicolas Goedert, 21, Ro'dewé3264 Mamer, Luxembourg

Continuation of Ser. No. 499,732, May 31, 1983, abandoned. This application Apr. 19, 1985, Ser. No. 724,506

Claims priority, application European Pat. Off., May 28, 1982, 82630058.4

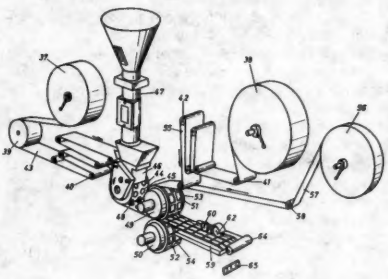
Int. Cl.[4] B65D *33/10, 33/14;* B65B *29/04*

U.S. Cl. 426—394 **2 Claims**

1. A method for manufacturing infusion filter-bags, comprising placing metered heaps (48) of plant-based infusible product in pairs side by side on a continuous filterpaper web (43) using a rotary metering device, and covering said heaps with a second continuous filterpaper web (55) having substantially the same dimensions as said first filterpaper web, covering said second filterpaper web with at least a third continuous paper web which is narrower than the second paper web over a central portion of said second paper web and fed longitudinally with respect to the second paper to partially cover the second paper web (57) and welding said three paper webs together by contacting said three paper webs with two opposed continuously rotating rotary welding cylinders having concave cells for receiving said heaps, and having mating welding surfaces welding said three paper webs together in the area of a circumference portion of each heap to form a double row of filter bags while leaving the longitudinal edge portions of said third paper web unwelded such that said third paper web forms a pocket for each filter bag which is larger than a spoon which is to be received in said pocket and such that said pocket will loosely receive said spoon, and cutting off units (65) having one or more filter-bags thus produced.

2. An apparatus for manufacturing infusion filter-bags comprising:

a first continuous-feed filterpaper (43) spool for feeding a first filterpaper web (37), a second continuous-feed filterpaper (55) spool (38) of substantially the same or near the same dimensions as said first spool for feeding a second filterpaper web, tensioning cylinders (30, 40; 41, 42) downstream of each spool for tensioning said filterpaper webs, a feed hopper (47) connected to a distribution headbox (46) for dispensing a plant-based infusible product, a rotary metering cylinder (44) having circumferentially spaced pairs of side by side metering cells (45) for receiving said product from said feed hopper and depositing said product directly on one of said filter paper webs in pairs of side by side heaps, two rotary cooperating welding cylinders (49, 50) having pains of side by side welding surfaces (53, 54) and pains of side by side concave receiving cells



(51, 52), said welding cylinders receiving filterpaper webs from said first and second spools, and at least a third continuous-feed paper (57) spool (56) of reduced width relative to said first and second spools for feeding a third filterpaper web, and at least a deviating cylinder (58) downstream of said third spool for tensioning said third filterpaper web, and adapted to cover the second filterpaper web (55) fed by said second continuous-feed spool (38) with said third filterpaper web (57) only over a central portion of said second filterpaper web and in such a manner as to feed said third filterpaper web from said third spool longitudinally with the second filterpaper web from said second spool into said welding cylinders wherein said cooperating welding cylinders provide mating concave cells for receiving said heaps and mating welding surfaces for welding said three paper webs together in the area of a circumference portion of each heap such that said three webs are welded together simultaneously to form a double row of filter bags while leaving the longitudinal edge portions of said third filter paper web unwelded such that said third filterpaper web forms a pocket for each filter bag which is larger than a spoon which is to be received in said pocket and such that said pocket will loosely receive said spoon.

4,609,557

MANUFACTURE OF BREAD CRUMB-LIKE PRODUCT

Wei-Wen Mao, Dover, Del.; Robert E. Altomare, Yonkers, N.Y.; Joseph Giacone, Princeton Junction, and Casimiro P. Matias, Elizabeth, both of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed May 23, 1985, Ser. No. 737,307

Int. Cl.[4] A21D *13/00*

U.S. Cl. 426—549 **27 Claims**

1. A process for preparing a bread crumb mix with texture and appearance typifying the internal and external portions of a bread loaf from a single process comprising:

(a) feeding a farinaceous material comprising wheat flour in amounts ranging from 55% to 90% by weight and containing wheat gluten; flaky crust flour in amounts of 10% to 30% by weight and malted barley flour in amounts 4% to 15% by weight together with 0% to 4% by weight of an edible acid and a gas forming agent other than fermentable gas generators into a cooker extruder, the gas producing in the final product an open spongy texture similar to that observed in a fully baked, yeast leavened, flour based product;

(b) adding sufficient water to the extruder to increase the moisture of the farinaceous mixture to an amount ranging from about 20% to 40% by weight of the farinaceous mixture and mixing to form a dough;

(c) cooking the dough within the extruder for a time ranging from about 10 to about 20 seconds and at a temperature ranging from 200° F. to 300° F. and pressure ranging from 2.5 psig to 500 psig to develop the gluten into a uniform structure and substantially gelantinize the starch;

(d) extruding the cooked dough;

(e) tempering the cooked extruded dough to set the final structure and to complete the cook;

(f) cutting the dough into small lengths ranging from 0.5 to 24 inches;

(g) toasting the cut extruded dough at a temperature ranging from 250° F. to about 1000° F.;

(h) separating the toasted, cut, extruded dough into a first part consisting of from 65% to 85% of the extruded dough and a second part consisting of from 15% to 35% of the extruded dough;

(i) subjecting the first part to a grinding device to produce particles having a distribution of sizes ranging from 0.5 inches to about 0.0117 inches;

(j) subjecting the second part to a humidifying chamber having humidity ranging from 50% to 100% and temperature ranging from 120° F. to 250° F. for a time ranging from 2 minutes to 10 minutes;

(k) subjecting the humidified second part to a grinding device to produce particles having a distribution of sizes ranging from 0.5 inches to about 0.0117 inches;

(l) recombining the ground first part and the humidified ground second part;

(m) drying the recombined first part and second part at temperature ranging from 200° F. to 350° F. for from 2 minutes to 10 minutes to produce a final crumb moisture ranging from 2% to 10%.

4,609,558

BREAD CRUMB-LIKE PRODUCT HAS ITS MANUFACTURE

Joseph Giacone, Princeton Junction; Casimiro P. Matias, Elizabeth, both of N.J.; Robert E. Altomare, Yonkers, N.Y., and Wei-Wen Mao, Dover, Del., assignors to General Foods Corporation, White Plains, N.Y.

Filed May 23, 1985, Ser. No. 737,308

Int. Cl.[4] A21D *13/00*

U.S. Cl. 426—549 **24 Claims**

1. A process for preparing a bread crumb mix with texture and appearance typifying the internal and external portions of a bread loaf from a single process comprising:

(a) feeding a farinaceous material comprising wheat flour in amounts ranging from 55% to 90% by weight and containing wheat gluten; flaky crust flour in amounts of 10% to 30% by weight and malted barley flour in amounts of 4% to 15% by weight together with an edible acid and a gas forming agent other than fermentable gas generators into a cooker extruder, the acid present in amounts sufficient to lower the pH of a produced farinaceous dough to that of a conventional fermented dough and the gas producing in the final product an open spongy texture similar to that observed in a fully baked, yeast leavened, flour based product;

(b) adding sufficient water to the extruder to increase the moisture of the farinaceous mixture to an amount ranging from about 20% to 40% by weight of the farinaceous mixture and mixing to form a dough;

(c) cooking the dough within the extruder for a time ranging from about 10 to about 20 seconds and at a temperature ranging from 200° F. to 300° F. and pressure ranging from 2.5 psig to 500 psig to develop the gluten into a uniform structure and substantially gelatinize the starch;

(d) extruding the cooked dough;

(e) tempering the cooked extruded dough to set the final structure and to complete the cook;

(f) cutting the dough into small lengths ranging from 0.5 to 12 inches;

(g) grinding the dough while it is still moist and warm into discrete dough particles; and

(h) subjecting the most discrete dough particles to a distinct 2 zone simultaneous toasting/drying process wherein the humidity of the first zone ranges from 30 to 70%, the time within the first zone ranges from 1–3 minutes and the temperature within the first zone ranging from about 250° F. to about 400° F., and wherein the humidity within the second zone ranges from 20% to 40%, the time within the second zone ranges from 1–3 minutes and the temperature within the second zone ranges from about 200° F. to about 350° F. to achieve the desired texture, color contrast and moisture level.

4,609,559

TAR-DEPLETED LIQUID SMOKE AND METHOD OF PREPARATION

Myron D. Nicholson, Lockport, Ill., assignor to Viskase Corporation, Chicago, Ill.

Division of Ser. No. 417,173, Sep. 14, 1982, Pat. No. 4,431,033, which is a continuation-in-part of Ser. No. 312,366, Oct. 16, 1981, abandoned. This application Nov. 30, 1983, Ser. No. 556,443

Int. Cl.[4] A23L *1/221*

U.S. Cl. 426—650 **29 Claims**

1. A method of preparing an aqueous liquid smoke composition comprising: providing a tar-containing aqueous liquid smoke solution, having an absorptive power of at least about 0.25 at 340 nm. wave length, and an organic liquid solvent which is either nonreactive with said liquid smoke solution or reactive with said liquid smoke solution to form a derivative liquid solvent, said liquid solvent being immiscible in the liquid smoke solution and having a hydrogen bonding solubility parameter in the liquid smoke environment of at least about 2.7; extracting said liquid smoke solution with said liquid solvent, in a volume ratio between about 1:1 and 65:1 of liquid smoke solution to liquid solvent, under extraction conditions to form a tar-enriched liquid solvent fraction and an aqueous tar-depleted liquid smoke fraction; and separating the fractions to provide said aqueous tar-depleted liquid smoke fraction as said aqueous liquid smoke composition.

4,609,560

NOVEL EMULSIFIER COMPOSITION AND QUALITY IMPROVEMENT METHOD FOR STARCH-CONTAINING FOODS

Mitsuharu Yuda; Hiroshi Sakka; Kenichi Yamada; Yoshihito Koizumi, all of Hirakata, and Takeshi Yamaguchi, Chiba, all of Japan, assignors to Riken Vitamin Company, Ltd., Tokyo, Japan

Filed Nov. 6, 1984, Ser. No. 668,926
Claims priority, application Japan, Nov. 9, 1983, 58-210548
Int. Cl.[4] A21D *2/16*; A23L *1/16*
U.S. Cl. 426—653 **8 Claims**

1. A powdered emulsifier composition prepared by melt mixing 60–95% by weight of a saturated fatty acid monoglyceride and 40–5% by weight of a cis-type unsaturated fatty acid monoglyceride, converting the resultant mixture to a powder to spray cooling under atmospheric pressure conditions at a temperature of below 5° C., whereby the temperature of the resultant powdered produce is below 10° C. and wherein said powder product contains a major amount of the saturated fatty acid monoglyceride in a β-crystalline form.

4,609,561

FROZEN AERATED FRUIT JUICE DESSERT

Bill R. Wade, and Thelma L. Wade, both of Farmington, Wash., assignors to Olympus Industries, Inc., Spokane, Wash.

Continuation-in-part of Ser. No. 681,248, Dec. 13, 1984. This application Jul. 26, 1985, Ser. No. 759,821
Int. Cl.[4] A23G *9/00*
U.S. Cl. 426—565 **25 Claims**

1. A frozen fruit juice cream having at least 50 percent overrun and being eaten as frozen, comprising:

at least one type of fruit juice;

from about 0.05 percent to about 1.5 percent by weight of at least one stabilizer based upon the total weight of said cream, said stabilizer being derived from a natural source;

from about 0.05 percent to about 0.15 percent by weight of a vegetable protein based upon the total weight of said cream;

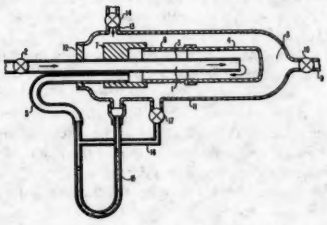
an amount of water and including remaining ingredients selected from the group consisting of flavoring, spices, flavor enhancers, organic acids, and mixtures thereof such that said cream has an overall brix value of from about 10 to about 35, and said cream being free of added sugar and corn sweetener additives.

4,609,562

APPARATUS AND METHOD FOR DEPOSITING COATING ONTO POROUS SUBSTRATE

Arnold O. Isenberg, Forest Hills Boro, and Gregory E. Zymboly, Penn Hills Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 20, 1984, Ser. No. 684,438
Int. Cl.[4] C23C *16/22*
U.S. Cl. 427—8 **14 Claims**



12. In a chemical and electrochemical vapor deposition process for forming a ceramic coating on a ceramic substrate wherein a first gaseous reactant on one side of said substrate permeates through pores in said substrate and reacts with a second gaseous reactant that is present on the other side of said substrate, closing said pores by forming said ceramic coating on said other side, a method of detecting the presence of breaks in said ceramic coating and of closing them, comprising

(A) measuring the difference in pressure between said gaseous reactants on each side of said substrate;

(B) maintaining a higher pressure on said first gaseous reactant than on said second gaseous reactant; and

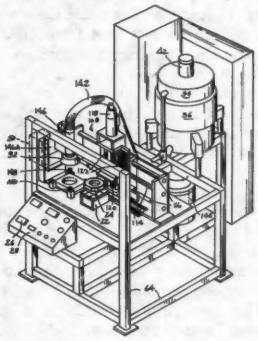
(C) when said measurement of the difference in pressure increases then decreases, reducing then increasing the difference between the pressures on said two gaseous reactants.

4,609,563

METERED CHARGE SYSTEM FOR CATALYTIC COATING OF A SUBSTRATE

Thomas Shimrock, Chatham; Victor Rosynsky, Ewing Township, both of N.J.; Theodore M. Caridi, Aurora, Ohio; John M. Collins, Sagamore Hills, Ohio, and Michael G. Koubek, Maple Heights, Ohio, assignors to Engelhard Corporation, Menlo Park, N.J.

Filed Feb. 28, 1985, Ser. No. 706,708
Int. Cl.[4] B05D *1/18, 3/00, 5/00*; C23C *14/00*
U.S. Cl. 427—8 **49 Claims**



1. A process for applying a predetermined amount of catalyst to the interior surfaces of a hollow substrate comprising the steps of:

introducing a predetermined amount of catalyst slurry into the cavity of a dip pan having a bottom;

lowering a hollow substrate having first and second open ends and interior surfaces to be coated such that a first end is received in the cavity of the dip pan and fully immersed in the slurry;

maintaining the substrate at a height such that the first end thereof is located at a predetermined distance above the bottom of the cavity in the dip pan;

applying a vacuum from a source to the second end of the substrate to draw all of the slurry contained in the dip pan upwardly into the substrate for coating the interior surfaces thereof; and

continuing to apply vacuum for a predetermined period of time to the second end of the substrate after all of the slurry has been drawn out of the dip pan and into the substrate for drying the coating formed on the substrate.

4,609,564

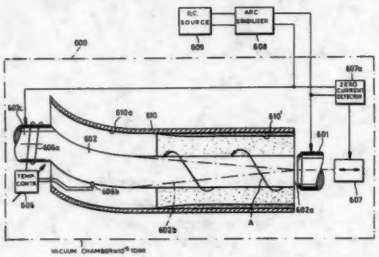
METHOD OF AND APPARATUS FOR THE COATING OF A SUBSTRATE WITH MATERIAL ELECTRICALLY TRANSFORMED INTO A VAPOR PHASE

Eduard Pinkhasov, Forest Hills, N.Y., assignor to Wedtech Corp., Bronx, N.Y.

Continuation-in-part of Ser. No. 358,186, Mar. 15, 1982, Pat. No. 4,438,153, which is a continuation-in-part of Ser. No. 237,670, Feb. 24, 1981, Pat. No. 4,351,855. This application May 13, 1983, Ser. No. 494,302

Int. Cl.[4] C23C *13/00, 13/12*

U.S. Cl. 427—37 **6 Claims**



1. A method of depositing a material upon a substrate which comprises the steps of:

juxtaposing an elongated electrode composed of at least one component of said material with a surface of said substrate along the length of said electrode;

evacuating the space in which said electrode is juxtaposed with said substrate to at most 10^{-5} torr and maintaining the pressure in said space substantially no higher than 10^{-5} torr during deposition; and

striking an electrical arc with said electrode at one end thereof at a voltage of substantially 30 to 60 volts and with a current of substantially 50 to 90 amperes to evaporate said electrode over a length thereof receding from said arc and to deposit the material evaporated from said electrode on said substrate over said length.

6. An apparatus for carrying out the method of claim 5 which comprises an elongated shaped electrode composed at least in part of a material to be deposited upon a substrate surface of complex shape, said electrode having a shape conforming to the complex shape of said substrate, means for striking an arc at one end of said electrode whereby material is evaporated from said electrode, means for heating said electrode at the opposite end thereof; and

means for evacuating the space between said electrode and said substrate to a pressure of at most about 10^{-5} torr.

4,609,565

METHOD OF FABRICATING SOLAR CELLS

Douglas A. Yates, Burlington, Mass., assignor to Mobil Solar Energy Corporation, Waltham, Mass.

Continuation-in-part of Ser. No. 659,279, Oct. 10, 1984, abandoned, which is a continuation of Ser. No. 563,061, Dec. 19, 1983, abandoned. This application Dec. 13, 1984, Ser. No. 681,003

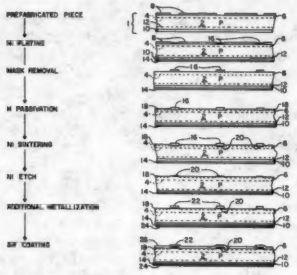
Int. Cl.[4] B05D *3/06, 5/12*

U.S. Cl. 427—38 **20 Claims**

1. A method of fabricating solid state semiconductor devices comprising in sequence the steps of:

(a) providing a silicon substrate having opposing first and second surfaces;

(b) exposing selected regions of said first surface to a hydrogen ion beam of an intensity and for a duration sufficient to form a surface layer on said first surface to which selected metals will only poorly adhere; and



(c) metallizing said first surface exclusive of said selected regions with at least one of said selected metals.

4,609,566

METHOD AND APPARATUS FOR REPAIRING DEFECTS ON A PHOTO-MASK PATTERN

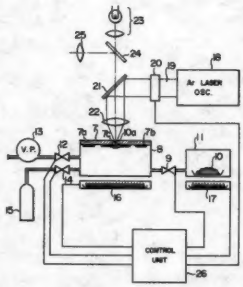
Mikio Hongo; Katsurou Mizukoshi; Tateoki Miyauchi, all of Yokohama; Takao Kawanabe, Tokorozawa, and Yasuhiro Koizumi, Sayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 20, 1985, Ser. No. 713,860

Claims priority, application Japan, Mar. 21, 1984, 59-52128

Int. Cl.[4] B05D *3/06;* **C23C** *14/00, 16/00*

U.S. Cl. 427—53.1 **25 Claims**



1. A method of repairing a defect of pattern on a photo-mask comprising the steps of:

(a) mounting said photo-mask on a repairing chamber with a pattern forming surface of said mask facing inwardly, said chamber being hermetically sealed including said photo-mask plate;

(b) introducing vapor of repairing material which includes a metallic element into said repairing chamber; and

(c) locally heating only a defective portion of said mask to be repaired to a temperature higher than a predetermined temperature, so that the vapor of the repairing material in said repairing chamber resolves and the metal included in the material deposits at the defective portion thereby to fill the transparent defect, whereby the metal of the rapairing material deposits at the defective portion from the vapor of the repairing material due to the local heating of the defective portion.

2. A pattern repairing method according to claim 1, wherein said heating step (c) includes a step of projecting a laser beam from the exterior of said repairing chamber onto the defective

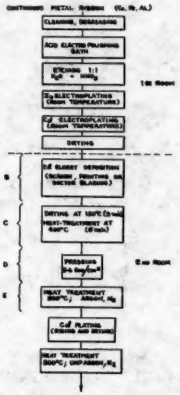
portion of said mask so that only said defective portion is heated.

4,609,567

HIGH EFFICIENCY STABLE CDS-Cu_2S SOLAR CELLS MANUFACTURING PROCESS USING THICK FILM METHODOLOGY

Ottilia F. Tòth, and Alexandre Kocsis, both of 1382 La Terrière, Sherbrooke, Quebec, Canada (J0K 2R2)

Filed Oct. 19, 1984, Ser. No. 662,834
Claims priority, application Canada, Nov. 14, 1983, 441,034
Int. Cl.[4] B05D *5/12*
U.S. Cl. 427—74 **30 Claims**



1. A process of manufacturing a high-efficiency, stable CdS-Cu_2S solar cell using a thick film methodology, said process comprising the steps of:

A—preparing a CdS slurry from a Cd-doped, CdS powder;

B—depositing a 10–15 μ thick layer of the CdS slurry onto a substrate plated with thin layers of Zn and Cd;

C—drying the CdS layered substrate and subjecting it to heat treatment;

D—pressing the heat-treated substrate;

E—subjecting the pressed, CdS layered substrate to another heat treatment to cause CdS recrystallisation and annealing;

F—forming a thin, layer of Cu_xS wherein the value of x is from 1.996 to 2 onto the surface of the heat-treated, CdS layered substrate under an inert atmosphere to produce a CdS-Cu_xS layered assembly;

G—subjecting the CdS-Cu_xS layered assembly to heat treatment under a H_2 atmosphere in the presence of CaO;

H—providing an upper conductor onto the upper surface of the heat treated assembly to complete the desired, stable CdS-Cu_2S solar cell; and

I—encapsulating the obtained cell.

4,609,568

SELF-ALIGNED METAL SILICIDE PROCESS FOR INTEGRATED CIRCUITS HAVING SELF-ALIGNED POLYCRYSTALLINE SILICON ELECTRODES

Yun Bai Koh, Sunnyvale; Frank Chien, Los Altos, and Madhu Vora, Los Gatos, all of Calif., assignors to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed Jul. 27, 1984, Ser. No. 634,936
Int. Cl.[4] H01L *21/20*
U.S. Cl. 427—85 **8 Claims**

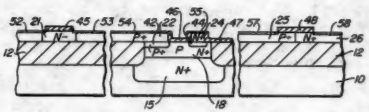
1. A process for fabricating metal silicide interconnections to polycrystalline silicon regions on a semiconductor structure, where some of the polycrystalline regions are of the type utilized to form self-aligned doped regions in a semiconductor substrate underlying the polycrystalline region, said process comprising:

forming a laying of polycrystalline silicon containing impurity on the surface of a semiconductor substrate to form a resulting structure;

forming regions of a first material on the surface of the polycrystalline silicon except over those portions where metal silicide is not desired on the polycrystalline silicon surface;

patterning the polycrystalline silicon to form regions of polycrystalline silicon and to expose selected portions of the surface of the substrate;

treating the structure to cause some of the impurity to diffuse into the semiconductor substrate from a first region of polycrystalline silicon to form a first doped region in the structure that is self-aligned with the first region of polycrystalline silicon;



protecting the portions of the polycrystalline silicon regions which are not overlaid by said first material and the exposed portions of the substrate which are not overlaid by polycrystalline silicon by forming a protective coating over these portions;

removing said regions of first material to expose the portions of the surface of the polycyrstalline silicon layer where the formation of silicide is desired;

depositing a layer of a metal capable of reacting with silicon, with the metal layer deposited across the entire treated structure including over the protective coating and over the unprotected exposed portions of the polycrystalline silicon; and

reacting the metal with the unprotected portions of the polycrystalline silicon but not with the protective coating to thereby form metal silicide interconnections to the unprotected portions of the polycrystalline silicon.

4,609,569

METHOD OF PREPARING MODIFIED POLYSILOXANE CONTAINING POLYMERS

Robert Edelman, Staten Island, N.Y., and William R. Collins, North Brunswick, N.J., assignors to M&T Chemicals Inc., Woodbridge, N.J.

Filed Mar. 1, 1985, Ser. No. 707,723
Int. Cl.[4] B05D *5/12*
U.S. Cl. 427—93 **41 Claims**

1. A method of modifying the properties of a siloxane-containing polyimide or poly(amide-imide) which comprises heating said siloxane-containing polyimide or poly(amide-imide) in the presence of an organic alcohol, a phenol or a thiol which contain at least two reactive hydrogen-containing groups.

4,609,570

RELEASE COMPOSITION FOR HYDRAULIC BONDING MATERIALS, METHOD FOR FACILITATING UNMOLDING OF HYDRAULIC BONDING MATERIALS FROM MOLDS, AND METHOD FOR CASTING MOLDED PRE-FORMED ARTICLES OF HYDRAULIC BONDING MATERIALS

Robert Couleau, Parsac, and Jean P. Guicquero, Labarte sur Leze, both of France, assignors to Societe Anonyme Chryso, Mazarin, France

Filed Mar. 25, 1983, Ser. No. 479,030
Claims priority, application France, Mar. 25, 1982, 82 05481
Int. Cl.[4] B44D *1/20*; B28B *7/36*
U.S. Cl. 427—135 **42 Claims**

1. A release composition for facilitating the unmolding of hydraulic bonding material such as concrete from molds by being coated on the contact surfaces of said molds before said bonding material is placed in said molds; said release composition comprising the combination of the following elements:

(a) at least one active release agent selected from the group consisting of ammonium salts of organic acids;

(b) at least one clarifying, anti-freeze agent selected from the group consisting of hydroxyethyl ethers of the general formula $R(OCH_2CH_2)n\ OH$, where R is selected from the group consisting of linear and branched aliphatic radicals having from 1 to 6 carbon atoms, and n is a number between 1 and 3;

(c) at least one spreading agent selected from the group consisting of esters, fatty ethoxy alcohols, and low molecular weight cellulosic derivatives;

(d) at least one lubricating agent selected from the group consisting of water-soluble polymers; and

(e) a solvent medium comprising water.

25. A method for facilitating the unmolding of a hydraulic bonding material from a mold, comprising, prior to casting said hydraulic bonding material in said mold, the steps of:

(a) coating the molding surfaces of said mold with the release composition of claim 1; and

(b) permitting said release composition to dry.

38. A method of making a molded, pre-formed article comprising the steps of:

(a) casting a hydraulic bonding material in a mold treated in accordance with claim 25;

(b) permitting said hydraulic bonding material to set; and

(c) removing the set hydraulic bonding material from said mold.

4,609,571

PRIMER SYSTEM FOR GREASE REPELLANT PAPERS

Edward W. Tytke, Savannah, Ga., assignor to Union Camp Corporation, Wayne, N.J.

Filed Feb. 7, 1985, Ser. No. 699,260
Int. Cl.[4] B05D *5/10*
U.S. Cl. 427—208.2 **12 Claims**

1. A method of increasing the adhesive reception of a grease-repellant paper comprising a sheet of cellulosic paper that has been treated with a fluorocarbon sizing agent, which comprises;

providing said paper comprising a sheet of cellulosic paper that has been treated with a fluorocarbon sizing agent;

priming the surface of the provided treated paper with a mixture consisting essentially of a water emulsion of styrene/butadiene rubber and alcohol; and

applying adhesive to primed surface of said paper.

4,609,572

PROCESS FOR THE PRODUCTION OF CHEMICALLY RESISTANT COATINGS

Hermann Gruber, Leverkusen, and Alois Fehlbier, Burscheid, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 4, 1985, Ser. No. 719,782
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1984, 3414807
Int. Cl.[4] B05D *3/02*
U.S. Cl. 427—385.5 **16 Claims**

1. A process for applying a chemically resistant coating to a substrate which comprises coating a substrate with a composition comprising

(a) a liquid polyisocyanate component which is present in an amount sufficient to provide an isocyanate index for said composition of at least 30,

(b) a polyol component containing at least one organic polyhydroxyl compound having a hydroxyl group content of about 0.5 to 15% by weight,

(c) water in a quantity of about 20 to 60% by weight, based on the weight of component (b),

(d) glycerine in a quantity of about 40 to 200% by weight, based on the weight of component (b) and

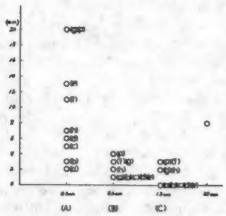
(e) at least one alkaline earth metal hydroxide or oxide in a quantity of about 50 to 1000% by weight, based on the weight of glycerine.

4,609,573

PROCESS FOR INHIBITING CORROSION OF STEEL MATERIALS BUILT IN INORGANIC MATERIALS

Kazuo Omata, Ichikawa; Toshihiko Shimizu, Narashino; Hiroshi Ibe, Higashikurume, and Kenji Hara, Chiba, all of Japan, assignors to Onoda Construction Materials Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1985, Ser. No. 710,830
Claims priority, application Japan, Apr. 27, 1984, 59-83892
Int. Cl.[4] B05D *1/36*
U.S. Cl. 427—403 **3 Claims**



1. A process for inhibiting corrosion of steel materials built in inorganic materials, which comprises subjecting the surface of an inorganic material having a steel material built therein to the following steps (A) and (B) in any order:

step (A): applying an aqueous solution of calcium nitrite having a corrision-inhibiting effect on said steel material to the surface of the inorganic material to impregnate said material with the solution, and

step (B): applying an aqueous solution of lithium silicate thereto to effect the impregnation, and subsequently, after subjecting the surface of the inorganic material to said steps (A) and (B), subjecting the inorganic material to step (C) as follows:

step (C): topcoating the inorganic material with a cement composition containing a polymer dispersion.

4,609,574

SILICONE RELEASE COATINGS CONTAINING HIGHER ALKENYL FUNCTIONAL SILOXANES

John R. Keryk, Mills Township, Midland County; Peter Y. K. Lo, and LeRoy E. Thayer, both of Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 3, 1985, Ser. No. 783,715
Int. Cl.[4] B05D *1/36*
U.S. Cl. 427—407.1 30 Claims

1. A curable coating composition comprising:

(A) a triorganosiloxane-endblocked polydiorganosiloxane polymer having a viscosity at 25° C. of at least 25 centistokes, wherein 90 to 99.5 percent of all organic radicals are methyl, from 0.5 to 10 percent of all organic radicals are unsaturated radicals independently selected from the group consisting of the vinyl radical and higher alkenyl radicals represented by the formula $-R(CH_2)_mCH=CH_2$ wherein R denotes $-(CH_2)_n-$ or $-(CH_2)_pCH=CH-$ and m has the value of 1, 2, or 3; n has the value of 3 or 6; and p has the value of 3, 4, or 5, with the proviso that at least 50 mole percent of the unsaturated radicals are higher alkenyl radicals;

(B) a catalytic amount of a metal, hydrosilylation catalyst;

(C) a methylhydrogenpolysiloxane cross-linking agent, compatible with (A) and having an average of at least three silicon-bonded hydrogen atoms per molecule with the hydrogen radicals being bonded to separate silicon atoms;

(D) an effective amount of an inhibitor for the metal, hydrosilylation catalyst;

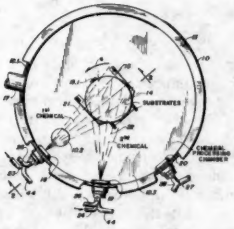
and wherein the composition contains 0.8 to 1.5 silicon-bonded hydrogen radicals for every unsaturated radical in the composition.

4,609,575

METHOD OF APPARATUS FOR APPLYING CHEMICALS TO SUBSTRATES IN AN ACID PROCESSING SYSTEM

Don C. Burkman, Excelsior, Minn., assignor to FSI Corporation, Chaska, Minn.

Filed Jul. 2, 1984, Ser. No. 626,640
Int. Cl.[4] B05B *13/02, 15/06*
U.S. Cl. 427—426 12 Claims



1. A method of mixing liquid chemicals that are highly reactive with one another and used in a step for processing a multiplicity of substrates in an acid processing system, and consisting in

confining a multiplicity of substrates in a closed but vented processing chamber in confronting, spaced and aligned relation to each other,

directing a first directional spray of a first liquid chemical and from a first spray source onto the substrate in the chamber, and

simultaneously directing a second directional spray of a second liquid chemical and from a second spray source onto the substrates in the chamber, said first and second sprays being directed at oblique angles with respect to each other and traversing each other and being directed toward and mixed at said multiplicity of substrates and thereby thoroughly mixing together while being applied to the substrates.

4,609,576

ARTIFICIAL CHRISTMAS TREES

Hon Liu, Hong Kong, Hong Kong, assignor to United Chinese Plastics Products Co. Ltd., Kowloon, Hong Kong

Filed Nov. 14, 1984, Ser. No. 671,522
Claims priority, application United Kingdom, Jun. 20, 1984, 8415719
Int. Cl.[4] A47G *33/06*
U.S. Cl. 428—18 6 Claims

1. A twig pair for forming a branch of an artificial Christmas tree or other decoration, said twig pair formed from a composite structure twisted at the centre of its length relative to its ends, said composite structure having a longitudinal centre line and comprising a sandwich of at least one strip of synthetic plastic sheeting provided between a pair of wires positioned approximately at said longitudinal centre line of said composite structure, said sheeting having longitudinal side edges provided with a very large number of closely spaced transverse cuts creating transverse elements simulating pine needles, the direction of twisting of said composite structure being oppositely oriented on either side of the centre of the length of said composite structure such that the simulated pine needles are inclined towards the ends of the twigs.

4,609,577

METHOD OF PRODUCING WELD OVERLAY OF AUSTENITIC STAINLESS STEEL

W. Herbert Long, Monroe, Ohio, assignor to Armco Inc., Middletown, Ohio

Filed Jan. 10, 1985, Ser. No. 690,169
Int. Cl.[4] B32B *15/00*
U.S. Cl. 428—683 8 Claims

1. A composite article comprising a core section of ferrous base metal and an outer section of a plurality of fused layers deposited by electric arc welding of an austenitic stainless steel filler which, prior to welding, consists essentially of, in weight percent, from about 0.015% to about 0.10% carbon, about 6.0% to about 10.0% manganese, about 2.0% maximum silicon, about 0.06% maximum phosphorus, about 0.06% maximum sulfur, about 13.0% to about 20.0% chromium, about 1.0% to less than 3.5% nickel, up to about 0.9% copper, up to about 1% molybdenum, 0.12% to 0.22% nitrogen, and balance essentially iron, said austenitic stainless steel having an instability factor ranging from about 4 to 8.2 calculated by the equation:

Instability factor=37.2—51.25 (%C)—2.59 (%Ni)—1.02 (%Mn)—0.47 (%Cr)—34.4 (%N)—3 (%Cu), at least the uppermost of said layers being substantially fully austenitic.

4,609,578

RESIN-COATED EXTENSIBLE HEAT-SET FIBERGLASS KNIT TAPE

Katherine E. Reed, Grant Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 6, 1984, Ser. No. 668,881
Int. Cl.[4] B32B *7/00*
U.S. Cl. 428—76 7 Claims

1. A storage-stable, resin-coated, knitted fiberglass tape comprising:

a. a knitted fiberglass tape which has been heat-set essentially without tension to prevent fraying of cut ends of said tape;

b. a liquid resin coated on said tape capable of curing to form a rigid article; and

c. a package for said tape suitable to prevent curing of said resin prior to the time of use;

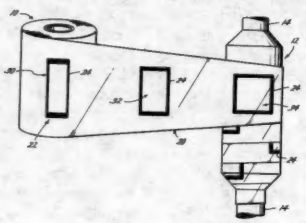
said resin-coated tape having an extensibility of at least 20 percent in the lengthwise direction prior to curing.

4,609,579

METHOD AND APPARATUS FOR APPLYING STRETCHABLE, PROTECTIVE WRAP

Gary G. Hills, Austin, Tex., assignor to Teltronics, Inc., Austin, Tex.

Filed Jul. 1, 1985, Ser. No. 750,890
Int. Cl.[4] B32B *27/14*
U.S. Cl. 428—195 16 Claims



1. A wrap for compressing a wire or the like, comprising:

an elongated, thin, tape adapted for wrapping around the wire, the tape being longitudinally stretchable and resilient to impart a compressive force to the wire when the tape is stretchingly wrapped around the wire; and

gauge means comprising an impression printed on the tape for indicating the amount of longitudinal stretch of the tape, the gauge means presenting a generally distorted visual appearance in the unstretched condition and a generally undistorted visual appearance when stretched a desireJ:longitudinal amount.

4,609,580

ABSORBENT FLOOR MAT

Luann T. Rockett, Norcross; David A. Nielsen, Roswell; Peter W. Shipp, Jr., Woodstock, all of Ga., and Greggory I. Knopp, Gillingham, England, assignors to Kimberly-Clark Corporation, Neenah, Wis.

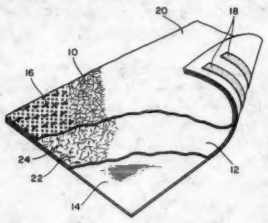
Filed Jan. 7, 1985, Ser. No. 689,421
Int. Cl.[4] D04H *1/00*
U.S. Cl. 428—198 9 Claims

1. An improved, low cost, absorbent mat comprising,

(a) an absorbent inner layer having a basis weight generally in the range of from about 100 to 500 grams per square meter comprising microfibers having absorbency rate in the range of up to about 2.5 seconds,

(b) on one side of said inner layer, a wear surface comprising a chemically bonded, continous filament nonwoven web having a basis weight generally in the range from about 15 to 200 g/sq. meter and an abrasion resistance of at least about 3½ hours, and

(c) on the side of said inner layer opposite from said wear surface, a liquid impervious film surface.



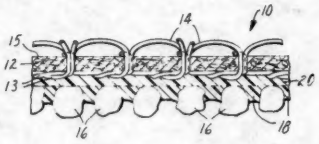
said mat being bonded by a spaced pattern of bond areas occupying up to about 25 percent of the surface area and having an absorbent capacity in the range of at least about 1000 gsm and a wicking rate in the range of at least about 100 quarter-inch squares.

4,609,581

COATED ABRASIVE SHEET MATERIAL WITH LOOP ATTACHMENT MEANS

Ronald L. Ott, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 15, 1985, Ser. No. 723,458
Int. Cl.[4] B24D *11/02*
U.S. Cl. 428—100 5 Claims



1. A flexible coated abrasive sheet material comprising a layer of abrasive grains adhered in place by a layer of bonding resin and having a multiplicity of loops projecting from its side opposite the abrasive grains which sheet material is adapted to be held on the support surface of a pad from which project a multiplicity of hooks by releasable engagement between the loops and the hooks while the sheet is driven by the pad to abrade a workpiece, wherein said sheet material comprises a carrier web with a multiplicity of multifilament yarns stitched into it with portions of the yarns providing said loops, and an adhesive coating on the side of the carrier web opposite the loops to adhere the yarn to itself and to the carrier web.

4,609,582

DIELECTRIC GLASS IN MULTILAYER CIRCUITS AND THICK-FILM CIRCUITS COMPRISING SAME

Hendrik J. M. Joormann, and Alois J. M. Van Gorp, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 26, 1984, Ser. No. 604,278
Claims priority, application Netherlands, May 6, 1983, 8301604
Int. Cl.[4] C03C *8/20, 8/10, 3/105*
U.S. Cl. 428—138 9 Claims

1. A dielectric glass for separating crossing conductors in multilayer circuits, said glass having a composition consisting essentially of 10–25 mol.% ZnO, 7.5–25 mol.% PbO, 50–60

mol.% SiO_2, and 7.5–12.5 mol.% Al_2O_3 together with 0–5% by weight of at least one of cobalt oxide, nickel oxide, copper oxide, vanadium oxide, chromium oxide, and aluminates of said oxides, up to 40% by weight of ZrO_2, zirconium aluminate, or zirconium silicate, and impurity amounts of less that 1 mol.%, wherein said composition contains 20–40% by weight of at least one of ZrO_2, zirconium aluminate, and zirconium silicate.

4,609,583

RUBBER BUMPER STRIP

Ernst G. Breckenfelder, Elmhurst, Ill., assignor to UIP Engineered Products Corporation, Addison, Ill.

Filed May 21, 1982, Ser. No. 380,568
Int. Cl.⁴ B32B *3/10*
U.S. Cl. 428—140 **3 Claims**

1. A rubber bumper strip for stripping shingles from the knives on an asphalt shingle cutting cylinder, said strip comprising

an elongate metal backing strip having a number of mounting sections located at spaced intervals,

bridge means interconnecting the mounting sections, said bridge means having a width less than the width of the mounting sections, and

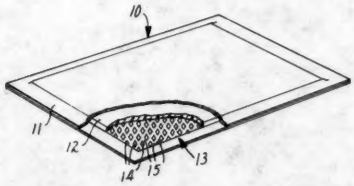
a rubber bumper molded to the backing strip with said rubber bumper molded to the surface of said mounting sections and completely encapsulating said bridge means.

4,609,584

ABSORPTIVE DEVICES

Larry P. Cutler, Eagan; Paul F. Guehler, White Bear Lake, and Thomas I. Insley, Lake Elmo, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 19, 1985, Ser. No. 777,742
Int. Cl.⁴ B32B *3/00*
U.S. Cl. 428—156 **6 Claims**



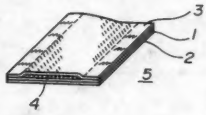
1. A microporous liquid impermeable but vapor permeable sheet material useful as the backsheet in a disposable absorptive device comprising about 30 to 80 parts by weight of a crystallizable thermoplastic polyethylene polymer and about 70 to 20 parts by weight of a hydrocarbon compound with which said thermoplastic polymer is miscible and in which said thermoplastic polymer will dissolve at the melting temperature of said thermoplastic polymer but will phase separate on cooling to a temperature at or below the crystallization temperature of said thermoplastic polymer, said microporous sheet material having an internal structure characterized by a multiplicity of spaced, randomly dispersed, non-uniform shaped, equiaxed particles of said thermplastic polymer coated with up to about 30 weight percent of said hydrocarbon compound, adjacent coated particles throughout said material being separated from one another to provide said material with a network of interconnected micropores and said adjacent thermoplastic polymer particles being connected to each other by a plurality of fibrils consisting of said thermoplastic polymer, said microporous sheet material having an embossed pattern thereon which covers up to 50% of the surface area of the film thereof.

4,609,585

CORRECTION TAPE FOR COPIES

Takeyosi Seijo, 33-12, Daita 1 Chome, Setagaya-ku, Tokyo, Japan

Filed Jun. 20, 1985, Ser. No. 747,131
Claims priority, application Japan, Jan. 31, 1985, 60-15472
Int. Cl.⁴ B32B *23/02*
U.S. Cl. 428—194 **8 Claims**



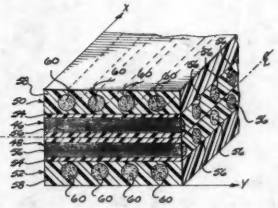
1. A correction tape, comprising: a transparent or semi-transparent base tape; an opaque layer coated on at least one face of said base tape, leaving at least one side area of said face uncoated, and having the same color as the color of an original or a duplicating master; a transparent or semi-transparent layer formed on said one face of said base tape and allowing writing images thereon; and an adhesive layer on the opposite face of said base tape.

4,609,586

THERMALLY CONDUCTIVE PRINTED WIRING BOARD LAMINATE

Warren M. Jensen, Kirkland, and William C. Wilkinson, Redmond, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Aug. 2, 1984, Ser. No. 637,111
Int. Cl.⁴ H05K *1/04*; B05D *5/12*
U.S. Cl. 428—209 **11 Claims**



1. A printed wiring board laminate adapted for use with a ceramic chip carrier, the printed wiring board laminate comprising:

an electrically conductive support comprising a metal matrix reinforced by graphite fiber, the support having a coefficient of thermal expansion parallel to the surface of the laminate of less than about 4 parts per million/°C.; and

a printed wiring board comprising dielectric fiber reinforced resin, the printed wiring board being secured to the support by means of an adhesive and having a coefficient of thermal expansion greater than about 10 parts per million/°C.;

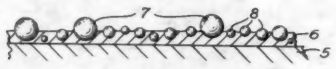
whereby the apparent coefficient of thermal expansion of the laminate parallel to the surface of the laminate approximates the coefficient of thermal expansion of a ceramic chip carrier, and whereby heat generated by components mounted to the printed wiring board may be conducted away by the support.

4,609,587

RETROREFLECTIVE MATERIALS AND USE

John J. Giordano, Belleville; Jeffrey P. Shawcross, Phillipsburg; Alfred E. Fuchs, Denville, and Robert Dejaiffe, Oak Ridge, all of N.J., assignors to Potters Industries, Inc., Hasbrouck Heights, N.J.

Filed Nov. 30, 1984, Ser. No. 676,820
Int. Cl.[4] B32B 5/16
U.S. Cl. 428—325 7 Claims



1. Retroreflective materials comprised of glass particles coated with a siloxane compound having some side chains which are hydrophobic and having other coupling-type side chains which are capable of forming chemical bonds to, or loose associations with, a wide variety of materials.

4,609,588

MAGNETIC RECORDING MEDIUM

Akihiko Hosaka; Kiyotaka Okuyama, and Kiyosumi Kanazawa, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed May 10, 1983, Ser. No. 493,238
Claims priority, application Japan, May 20, 1982, 57-83942
Int. Cl.[4] G11B 5/70
U.S. Cl. 428—329 4 Claims

1. In a magnetic recording medium comprising a magentic layer coated on a substrate and composed of ferromagnetic powder dispersed in a binder, the improvement wherein the magnetic layer contains

TiO_2 having an average particle size of at most 0.8 μm and a surface area of at most 25 m^2/g as measured by a nitrogen adsorption method, and

Al_2O_3 having an average particle size of at least 0.1 μm and a surface area of at most 30 m^2/g as measured by a nitrogen adsorption method; wherein the magnetic medium has the following characteristics:

S/N > −0.3 dB,

Wearing of magnetic head < 1.8 μm, and

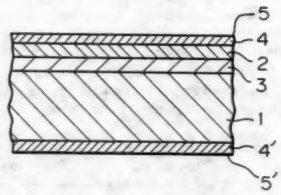
Sensitivity > −0.1 dB.

4,609,589

RELEASE SHEET

Yukio Hosoda; Hiro Ohtsubo, and Hiroyuki Yamada, all of Utsunomiya, Japan, assignors to Oji Paper Company, Ltd., Tokyo, Japan

Filed Jan. 14, 1985, Ser. No. 691,139
Claims priority, application Japan, Jan. 18, 1984, 59-6726; May 21, 1984, 59-102207; Nov. 27, 1984, 59-250086; Nov. 27, 1984, 59-250087; Nov. 27, 1984, 59-250088; Nov. 27, 1984, 59-250089; Nov. 27, 1984, 59-250090
Int. Cl.[4] C09J 7/02
U.S. Cl. 428—352 17 Claims



1. A release sheet comprising a support sheet having a release layer formed on at least one side thereof with an undercoated layer being disposed between said support sheet and the release layer, said undercoated layer being formed from a mixture of a soap-free type acrylic resin emulsion and oxidized starch.

4,609,590

METHOD OF MAKING A COATED QUARTZ OPTICAL COMMUNICATIONS FIBER AND THE COATED FIBER OBTAINED THEREFROM

Toshio Suzuki, and Kimio Yamakawa, both of Ichihara, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed May 17, 1985, Ser. No. 735,230
Claims priority, application Japan, May 31, 1984, 59-112630
Int. Cl.[4] D02G 3/00; B05D 5/06
U.S. Cl. 428—378 10 Claims

7. A communications fiber comprising a quartz communication fiber core having a primary coat, and optionally a first coat and a second coat in which the coats are a cured addition curable composition consisting essentially of in the uncured state

(a) organopolysiloxane with the average unit formula

$$R_aSiO_{(4-a)/2}$$

in which R is a monovalent organic radical and at least 95 mol % of R in (a) are methyl radicals and a is a number with a value of 1.8 to 2.2, said organopolysiloxane having molecular terminals of the general formula

$$-OSi(CH_3)_2\{(CH_2)_nCH{=}CH_2\}$$

in which n is 0 or 1,

(b) methylhydrogenpolysiloxane which has at least two silicon-bonded hydrogen atoms per molecule and whose average unit formula is

$$R^1_bSiO_{(4-b)/2}$$

in which R^1 is methyl radical or hydrogen atom and b is a number with a value of 1.5 to 3.0: (a) and (b) being present in sufficient amounts such that the molar ratio of the total moles of silicon-bonded hydrogen atoms in (b) to total moles of aliphatically unsaturated groups in the composition is from 0.75/1.00 to 1.05/1.00,

(c) a platinum-type catalyst wherein at least 20 ppm platinum-type metal is present based on the combined quantities of (a) and (b), and

(d) an alkynyl compound having at least one alkynyl group per molecule wherein the weight ratio of total alkynyl groups to platinum-type metal in the composition is 1.0/1.0 to 15.0/1.0.

4,609,591

NON-AQUEOUS COATING FOR GLASS FIBERS AND GLASS FIBERS COATED THEREWITH

Jean-Claude Pollet, Granville; Gordon P. Armstrong, Newark, and Martin C. Flautt, Granville, all of Onio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 10, 1985, Ser. No. 732,778
Int. Cl.[4] C08K 9/06, 5/35; B32B 9/00, 25/20
U.S. Cl. 428—391 13 Claims

1. A non-aqueous coating for glass fibers consisting essentially of 100% solids formulation of an organosilane, ethylene-ethylacrylate copolymer, a hydrogenated heterocyclic hydrocarbon thermoplastic resin, a microcrystalline wax, a viscosity-reducing agent of a low viscosity/high temperature oil, an antioxidizing agent, and a whitening agent.

4,609,592

MULTILAYERED STRUCTURE

Ping Y. Liu, Naperville, Ill., and Robert P. Hirt, Jr., Lenox, Mass., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Apr. 12, 1985, Ser. No. 722,844
Int. Cl.[4] B32B *27/36*
U.S. Cl. 428—412 18 Claims

1. A multilayer structure comprising:

(a) at least one layer comprised of an aromatic polyether imide resin; and

(b) at least one layer containing a modified aromatic polycarbonate composition comprising

(i) at least one high molecular weight aromatic thermoplastic polycarbonate resin,

(ii) at least one selectively hydrogenated linear, sequential or radial teleblock copolymer resin of vinyl aromatic compound (A) and (A') and an olefinic elastomer (B), of the type A-B-A', A-(B-A-B)$_n$-A, A(BA)$_n$B, (A)$_4$B, B(A)$_4$ or B((AB)$_n$B)$_4$, wherein n is an integer having a value of from 1 to 10 inclusive, and

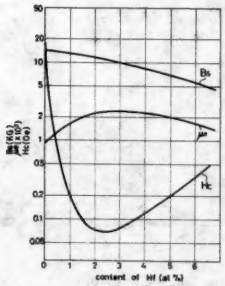
(iii) at least one ethylene propylene diene terpolymer; wherein said layer (a) is adjacent and adhered to said layer (b).

4,609,593

MAGNETIC RECORDING MEDIUM

Keishi Nakashima, Yunotani; Takashi Hatanai; Koichi Mukasa, both of Koide, and Yutaka Shimada, Sendai, all of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Jul. 16, 1984, Ser. No. 630,898
Claims priority, application Japan, Jul. 16, 1983, 58-128718
Int. Cl.[4] H01F *1/00*
U.S. Cl. 428—611 6 Claims



1. A magnetic recording medium comprising a base material, a 1st magnetic thin layer formed on the surface of the base material, and a 2nd magnetic thin layer formed on the surface of the 1st magnetic layer and having a perpendicular anisotropy, said 2nd magnetic thin layer being capable of recording data by magnetization in the thickness direction thereof, wherein said 1st magnetic thin layer is composed of a cobalt-based ternary amorphous alloy containing hafnium and tantalum where the content of said hafnium is in the range of from 1 atom% to 5 atom% and the content of said tantalum is in the range of 4 atom% to 10 atom%.

4,609,594

PROCESS FOR PRODUCING COLD ROLLED STEEL STRIP HIGHLY SUSCEPTIBLE TO CONVERSION TREATMENT AND PRODUCT THEREOF

Hisao Odashima; Takao Saito, and Yoshihiko Hirano, all of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jul. 16, 1984, Ser. No. 631,169
Claims priority, application Japan, Jul. 19, 1983, 58-131584
Int. Cl.[4] C25D *11/02, 7/06*
U.S. Cl. 428—629 6 Claims

1. A process for producing cold rolled steel strip highly susceptible to conversion treatments, comprising the steps of:

applying an anodic electrolytic treatment to at least one non-plated surface of a cold rolled steel strip to form a layer of oxides on the non-plated surface; and then

applying a cathodic electrolytic treatment to the anodic electrolytically treated surface of said cold rolled steel strip in an aqueous electolyte solution containing at least one member selected from the group consisting of Na_2SO_4, Na_2CO_3, K_2SO_4, K_2CO_3, NaH_2PO_4, Na_3HPO_4, Na_3PO_4, and H_3PO_4, at a current density of from 1 to 120 A/dm^2 with a quantity of electricity of from 0.1 to 150 C/dm^2, to remove a portion of the oxide layer to an extent that the remaining portion of the oxide layer is in the form of a number of dots separate from each other, and is an amount corresponding to a quanity of electricity of from 0.05 to 4.0 millicoulomb/cm^2 which is necessary to completely dissolve the remaining portion of the oxide layer by means of a cathodic electrolytic treatment in an aqueous solution containing 19.06 g/l of borax and having a pH of 6.4 at a constant current density of 5 microampere/cm^2, and corresponding to a natural reduction time of from 1.0 to 200 seconds which is necessary to completely reduce the remaining portion of the oxide layer into the corresponding metal at the natural potential of the oxide layer.

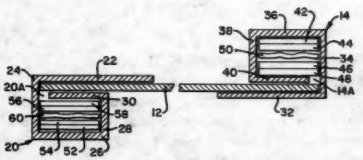
6. A single surface-plated, cold rolled steel strip highly susceptible to conversion treatment, produced by the process as claimed in any one of claims 1, 2, 3 or 4.

4,609,595

MOLTEN CARBONATE FUEL CELL SEPARATOR

Richard C. Nickols, East Hartford, Conn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 17, 1984, Ser. No. 661,850
Int. Cl.[4] H01M *2/08*
U.S. Cl. 429—35 12 Claims



1. A gaseous fuel cell for use in a stacked array of such gaseous cells, said gaseous fuel cell comprising:

a first electrode adapted to allow a first gas to flow therethrough and having a first catalyst in contact therewith:

a second electrode adapted to allow a second gas to flow

therethrough and having a second catalyst in contact therewith;

an electrolyte positioned between said first and second electrodes and in contact with said first and second catalysts;

a substantially flat, planar plate positioned in contact with a respective catalyst of one of said electrodes and having a plurality of edges around the periphery thereof, said plate comprised of a first material having high electrical conductivity;

a plurality of resilient sealing flanges positioned on and adapted to engage a respective edge of and to extend outward from the plane of said plate, said sealing flanges comprised of a second material having high corrosion resistance, wherein each sealing flange defines a channel and includes first and second facing members defining a slot therebetween within which a respective edge of said plate is inserted; and

biasing means positioned within the channels defined by each of said sealing flanges for urging a first facing member toward a second facing member in maintaining each of said sealing flanges in tight fitting engagement with a respective edge of said plate in establishing a gas-impermeable seal therewith.

4,609,596

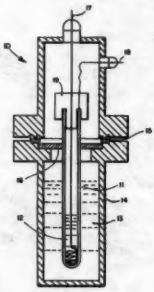
ELECTROCHEMICAL DEVICES UTILIZING MOLTEN ALKALI METAL ELECTRODE-REACTANT

David C. Hitchcock, Omaha, Nebr.; Catherine C. Mailhe, Berkeley, and Lutgard C. De Jonghe, Oakland, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 10, 1985, Ser. No. 753,496

Int. Cl.[4] H01M *4/36*

U.S. Cl. 429—104 **7 Claims**



1. In an improved electrochemical cell comprising:

a first electrode of a molten alkali metal;

a solid, impervious electrolyte containing a mobile alkali metal ion of the same alkali metal as is present in said first electrode, said electrolyte separating said first electrode from a second electrode; and,

a second electrode of a molten alkali metal receptive to the mobile alkali metal ion in said electrolyte;

the improvement consisting of the inclusion of a metal oxygen scavenger in contact with said first electrode whereby alkali metal oxide, which can form during operation of said cell from said first electrode and oxygen, is reduced if not eliminated during operation of said cell.

4,609,597

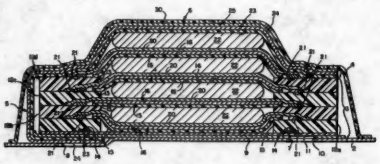
LAMINAR BATTERIES AND METHODS OF MAKING THE SAME

Paul A. Plasse, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 295,269, Aug. 24, 1981, Pat. No. 4,539,275. This application Jun. 27, 1985, Ser. No. 749,411

Int. Cl.[4] H01M *6/00*

U.S. Cl. 429—122 **7 Claims**



1. A composite web for use in the manufacture of laminar batteries, said composite web comprising an elongated sheet of thermoplastic liquid impermeable electrically insulating material formed with a spaced array of apertures extending in rows across said sheet and in columns along said sheet, an electrode assembly adhered to said sheet around the peripheries of each of said apertures, each electrode assembly comprising a piece of electrically conducting electrochemically inert thermoplastic sheet material uniformly coated on one side opposite the side adjacent said elongated sheet with a layer of electrochemically active particles in a binder, and a plurality of sheets of battery separator material each adhered to said elongated sheet over a different one of said electrode assemblies and confronting the electrode particle coating on the adjacent electrode assembly, said separator sheet having peripheries extending beyond the boundaries of said electrode assemblies and each being secured to confronting regions of said elongated sheet by spaced strips of adhesive material.

4,609,598

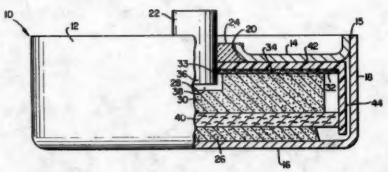
ELECTROCHEMICAL CELL

Gary R. Tucholski, Parma Heights, and Earl J. Chaney, Medina, both of Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 4, 1985, Ser. No. 794,541

Int. Cl.[4] H01M *2/32*

U.S. Cl. 429—174 **16 Claims**



1. An electrochemical cell comprising

(a) a ferrous metal housing having an opening through a wall of said housing;

(b) a non-ferrous metal terminal pin secured within said opening and electronically insulated from said housing;

(c) an anode, a cathode and an electrolyte disposed within said housing, said anode being selected from the group consisting of alkali metals, alkaline earth metals and alloys thereof, said anode being electronically connected to said housing thereby rendering said housing the anodic terminal of said cell; and

(d) a non-ferrous metal cathode collector electronically connected to said cathode and to said terminal pin thereby

rendering said terminal pin the cathodic terminal of said cell.

4,609,599

NEW LANTHANUM AND NICKEL BASED ALLOYS, THEIR MANUFACTURE AND THEIR ELECTROCHEMICAL APPLICATIONS

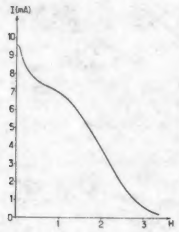
Annick Percheron nee Guegan, Paris; Jean-Claude Achard, Kremlin-Bicetre; Guy Bronoel, Versailles, and Joël Sarradin, Trappes, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), France

Continuation of Ser. No. 930,219, Aug. 2, 1978, abandoned. This application May 18, 1981, Ser. No. 264,523

Claims priority, application France, Aug. 2, 1977, 77 23812

Int. Cl.⁴ H01M *10/24*

U.S. Cl. 429—218 **21 Claims**



16. An electrochemical energy accumulator of the alkaline electrolyte type including a negative electrode based on lanthanum and nickel, said negative electrode comprising an alloy, corresponding substantially to the formula $LaNi_5$ in which one of the components La and Ni or both of them are partially substituted by a metal M selected from group VI or VII of the periodic table of elements, in an atomic proportion from 0.1 to 2 with respect to the nickel.

4,609,600

ELECTROCHEMICAL CELL CONTAINING ELECTRODE MADE OF POLYMERIC COMPOUND AND ELECTROLYTE CONTAINING ORGANIC COMPLEX LIGAND

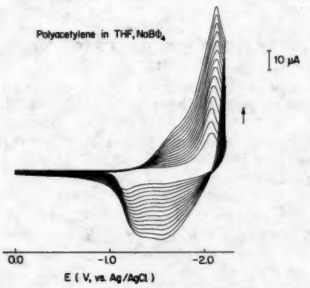
Jürgen Heinze, Freiburg, and John Mortensen, Stegen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 22, 1985, Ser. No. 704,327

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1984, 3406472

Int. Cl.⁴ H01M *10/40*

U.S. Cl. 429—197 **3 Claims**



1. An electrochemical cell or battery containing two or more electrodes and an electrolyte consisting of a solution or suspension of an ionic or ionizable compound, as a conductive salt, in an organic electrolyte solvent which is inert to the electrodes, one or more of the electrodes containing, as active electrode material, an electrochemically oxidizable and/or reducible polymer which, in the oxidized and/or reduced state, has an electrical conductivity greater than $10^{-2}\Omega^{-1}$ cm^{-1}, wherein the electrolyte contains an organic complex ligand possessing units of the formula

$$(-X-CH_2-CH_2-)$$

where X is O, S or NH.

4,609,601

PROCESS OF IMAGING AN AMORPHOUS SI(C) PHOTOCONDUCTIVE MEMBER

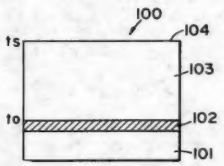
Shigeru Shirai, Yamato; Junichiro Kanbe, and Tadaji Fukuda, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 335,464, Dec. 29, 1981, Pat. No. 4,539,283. This application Feb. 26, 1985, Ser. No. 705,515

Claims priority, application Japan, Jan. 16, 1981, 56-5524; Jan. 16, 1981, 56-5525; Jan. 16, 1981, 56-5526

Int. Cl.⁴ G03G *13/22*

U.S. Cl. 430—31 **21 Claims**



1. An electrophotographic process comprising:

(1) charging a photoconductive member for electrophotography comprising a support and a layer on the surface of said support; said layer comprising an amorphous material having silicon atoms as matrix containing at least one of hydrogen atom and halogen atom; and containing in at least a portion thereof a layer region containing carbon atoms; said carbon atoms being distributed unevenly in the thickness direction of said layer and distributed evenly within the planes parallel to said support surface; and

(2) applying electromagnetic waves to said photoconductive member thereby forming an electrostatic image.

4,609,602

PHOTORESPONSIVE IMAGING MEMBERS WITH ELECTRON TRANSPORTING LAYERS

Beng S. Ong; Dasarao K. Murti, both of Mississauga, and Barkev Keoshkerian, Willowdale, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

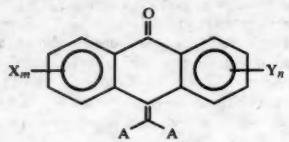
Filed Mar. 8, 1985, Ser. No. 709,867

Int. Cl.⁴ G03G *5/10*

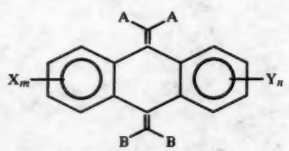
U.S. Cl. 430—58 **61 Claims**

1. An improved layered photoresponsive imaging member comprised of a photogenerating layer comprised of inorganic or organic photoconductive pigments, and in contact therewith an electron transporting layer comprised of compounds selected from the group consisting of anthraquinodimethanes, and anthrone derivatives of the following formulas dispersed in an inactive resinous binder:

A.



B.



wherein A and B are independently selected from the group consisting of CN and COOR, wherein R is an alkyl group; X and Y are independently selected from the group consisting of alkyl, aryl, halide, COOR, CN, hydroxy, and nitro; m is a number of from zero to 3; and n is a number of from zero to 3.

4,609,603

PROCESS FOR ACHIEVING CONSISTENT HIGH QUALITY IMAGES WITH MAGNETIC DEVELOPER COMPOSITION

John F. Knapp, Fairport; Robert J. Gruber, Pittsford; Lawrence Floyd, Jr., and Steven B. Bolte, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 14, 1984, Ser. No. 681,777

Int. Cl.[4] G03G *13/00, 9/10*

U.S. Cl. 430—39 **29 Claims**

1. A process for generating consistent high quality images for extended periods, consisting essentially of (1) providing a xerographic imaging, or printing apparatus; (2) adding thereto a stable two component developer composition comprised of resin particles, first pigment particles, second magnetite pigment particles, which are present in a greater amount than the first pigment particles, and blended flow additive particles; and carrier particles consisting of a ferrite core, or a steel core, and a coating thereover selected from the group consisting of terpolymers of styrene, methacrylate, and triethoxysilane; and polymethacrylate, which coating has incorporated therein conductive particles; (3) forming electrostatic latent images, or magnetic images in the apparatus; and (4) developing the images formed, wherein the developer composition retains its electrical properties for over 2.5 million imaging cycles.

4,609,604

PHOTOCONDUCTIVE MEMBER HAVING A GERMANIUM SILICON PHOTOCONDUCTOR

Keishi Saitoh, Ibaraki; Yukihiko Ohnuki, Kawasaki, and Shigeru Ohno, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1984, Ser. No. 643,441

Claims priority, application Japan, Aug. 26, 1983, 58-156682; Dec. 20, 1983, 58-240022; Dec. 20, 1983, 58-240023; Dec. 22, 1983, 58-242654

Int. Cl.[4] G03G *5/085*

U.S. Cl. 430—57 **58 Claims**

1. A photoconductive member comprising a substrate for photoconductive member and a light receiving layer provided on said substrate having a layer constitution in which a first layer region (G) comprising an amorphous material containing germanium atoms and at least one of hydrogen or halogen atoms and a second layer region (S) exhibiting photoconductivity comprising an amorphous material containing silicon atoms and at least one of hydrogen or halogen atoms are successively provided from the substrate side, said light receiving layer containing a substance for controlling conductivity (C) in a distributed state such that, in said light receiving layer, the maximum value of the content of said substance (C) in the layer thickness direction exists within said second layer region (S) or at the interface with said first layer region (G) and, in said second layer region (S), said substance (C) is distributed in greater amount on the side of said substrate.

4,609,605

MULTI-LAYERED IMAGING MEMBER COMPRISING SELENIUM AND TELLURIUM

Barry A. Lees, Fairport; Robert J. Flanagan, Macedon, and Monroe J. Hordon, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 4, 1985, Ser. No. 707,978

Int. Cl.[4] G03G *5/082, 5/09*

U.S. Cl. 430—58 **10 Claims**

1. An electrophotographic imaging member consisting essentially of a supporting substrate and only two selenium containing layers, one of said selenium containing layers being a charge transport layer having a thickness of between about 35 micrometers and about 75 micrometers substantially free of arsenic and tellurium and consisting essentially of selenium and a halogen selected from the group consisting of from about 4 parts per million by weight to about 13 parts per million by weight of a chlorine and from about 8 parts per million by weight to about 25 parts per million by weight of iodine and the other of said selenium containing layers being a charge generator layer having a thickness of between about 1 micrometer and about 20 micrometers and comprising selenium, about 5 percent to about 20 percent by weight tellurium, about 0.1 percent to about 4 percent by weight arsenic and a halogen selected from the group consisting of up to about 70 parts per million by weight of chlorine and up to about 140 parts per million by weight of iodine, one surface of said charge generator layer being in operative electrical contact with said charge transport layer and the other surface of said charge generator layer being exposed to the ambient atmosphere.

4,609,606

POLYESTERS COMPRISING RECURRING PHOTOCONDUCTIVE AND PHOTOCROSSLINKABLE UNITS AND ELEMENTS THEREOF

John M. Noonan; Jerome H. Perlstein, and Michael Scozzafava, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 1, 1985, Ser. No. 718,315

Int. Cl.[4] G03G *5/07*; G03C *1/68*

U.S. Cl. 430—69 **12 Claims**

1. A polyester comprising at least 12 mole percent polymerized recurring units containing an arylamine photoconductive component and at least 15 mole percent polymerized recurring units containing a photopolymerizable component and wherein each of said components is responsive to a different wavelength of light.

4,609,607

MAGNETIC TONER AND PROCESS FOR PRODUCING THE SAME

Seiichi Takagi, Tokyo, and Yoshihiko Hyosu, Sagamihara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1983, Ser. No. 519,415

Claims priority, application Japan, Aug. 6, 1982, 57-137056; Aug. 6, 1982, 57-137057; Aug. 6, 1982, 57-137058; Sep. 27, 1982, 57-168112

Int. Cl.[4] G03G *9/00*

U.S. Cl. 430—106.6 **18 Claims**

1. A process for producing magnetic toner particles having a specific resistance of 10^{11} ohm-cm or more, comprising the steps of:

(a) dispersing a monomer system having a synthetic resin monomer, a polymerization initiator and a magnetic material in an aqueous dispersion medium to obtain droplets of

the monomer system, said magnetic material being obtained by sintering and having a BET specific area of 10 m^2/g or less and a specific surface area diameter by permeability method of 0.1 μm to 2 μm; and

(b) carrying out suspension polymerization of the droplets to obtain said magnetic toner particles having the magnetic material dispersed primarily within said magnetic toner particles.

4,609,608

COLLOIDAL SIZE HYDROPHOBIC POLYMER PARTICULATE HAVING DISCRETE PARTICLES OF A METAL DISPERSED THEREIN

Jitka Solc, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 546,014, Oct. 27, 1983, which is a continuation-in-part of Ser. No. 216,695, Dec. 15, 1980, Pat. No. 4,421,660. This application Feb. 15, 1985, Ser. No. 702,174

The portion of the term of this patent subsequent to Dec. 20, 2000, has been disclaimed.

Int. Cl.⁴ G03G *9/14*

U.S. Cl. 430—106.6 **13 Claims**

1. An aqueous colloidal dispersion comprising a continuous aqueous phase and a polymer/inorganic solid disperse phase wherein a substantial portion of the particles of the disperse phase comprise a hydrophobic polymer matrix having dispersed therein essentially non-oxidized colloidal metal particles such that substantially all of the inorganic particles are maintained in a discrete spaced apart relationship to one another by the hydrophobic polymer.

4,609,609

UV-ABSORBENT COMPOUNDS, PROCESS FOR THEIR PREPARATION AND THEIR USE AS IMAGE DYES IN PHOTOGRAPHIC MATERIALS FOR THE SILVER DYE BLEACH PROCESS

Thomas-Markus Rohr, and Jakob Kuhn, both of Marly, Switzerland, assignors to Ciba Geigy AG, Basel, Switzerland

Filed Jul. 19, 1985, Ser. No. 757,549

Claims priority, application Switzerland, Jul. 24, 1984, 3577/84

Int. Cl.⁴ G03C *1/40, 5/18, 5/52*

U.S. Cl. 430—146 **3 Claims**

3. A process for the preparation of copies of a diazo-type method which comprises exposing onto a diazotype material by means of UV light or light having a high UV content, as an original, a photographic image prepared with the photographic silver dye bleach material according to claim 1 by imagewise exposure, silver development, dye and silver bleaching and fixing.

4,609,610

PHOTOGRAPHIC PRODUCTS EMPLOYING NOVEL NONDIFFUSIBLE COMPOUNDS WHICH RELEASE PHOTOGRAPHICALLY USEFUL GROUPS

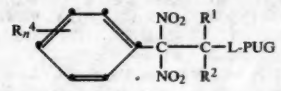
Richard P. Dunlap, and Thomas E. Gompf, both of Penfield, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 1, 1985, Ser. No. 761,280

Int. Cl.⁴ G03C *1/40, 5/54, 1/08, 1/34*

U.S. Cl. 430—223 **17 Claims**

1. A photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a nondiffusible compound capable of releasing a diffusible photographically useful group in an imagewise manner by a β-elimination reaction which compound has the structural formula:



wherein

R^1 and R^2 are each independently hydrogen, a saturated or an unsaturated, unsubstituted or a substituted, straight or branched chain aliphatic group having from 1 to about 30 carbon atoms;

an alicyclic group having from 4 to about 30 total carbon atoms;

a heterocyclic group having from 5 to 7 atoms in the heterocyclic ring;

an aromatic group, which may be substituted, having from 6 to about 30 carbon atoms;

or at least one of R^1 and R^2 and the carbon atom to which they are attached can constitute the atoms necessary to form a mono- or a poly-cyclic group having 5 or 6 atoms in each ring;

with the proviso that at least one of R^1, R^2 or of R^4 along with the phenyl group to which it is attached represents a ballast group;

R^4 is chloro, nitro, an unsubstituted or a substituted alkyl group having from 1 to about 22 total carbon atoms, $—SO_2R^5$ or $—SO_2NHR^5$;

R^5 is an unsubstituted or a substituted alkyl group having from 1 to about 6 total carbon atoms;

n is an integer of from 0 to 3;

L is a leaving group; and

PUG is a photographically useful group.

17. A photographic assemblage comprising:

(a) a photographic element according to claim 1;

(b) a dye image-receiving layer; and

(c) an alkaline processing composition with means for discharging same within said assemblage;

said assemblage also comprising a silver halide developing agent and an electron donor compound.

4,609,611

LIGHT INFORMATION RECORDING MEDIUM

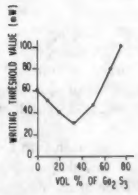
Masamiti Sigyo; Minoru Wada, and Yonosuke Takahashi, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 6, 1984, Ser. No. 668,779

Claims priority, application Japan, Nov. 7, 1983, 58-208564

Int. Cl.⁴ G03C *1/00*

U.S. Cl. 430—270 **11 Claims**



1. A light information recording medium comprising a substrate having formed thereon a recording layer capable of recording an information by thermal deformation thereof upon irradiation with a laser beam said recording layer consisting essentially of a mixture of a metal with at least one metal compound selected from the group consisting of Ga_2S_3 and MoO_3 wherein the recording layer contains the metal compound in a proportion of from 10 to 50% by volume.

4,609,612

PHOTOPOLYMERIZABLE COMPOSITION AND PROCESS WITH LIQUID MIXTURE OF PHOTOINITIATORS AND ETHYLENICALLY UNSATURATED COMPOUND

Godwin Berner, Rheinfelden, and Aloysius H. Manse, Allschwil, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 604,296, Apr. 26, 1984, Pat. No. 4,563,438. This application Oct. 4, 1985, Ser. No. 784,429

Claims priority, application Switzerland, May 6, 1983, 2492/83

Int. Cl.[4] G03C *1/76*

U.S. Cl. 430—281 10 Claims

1. A photopolymerizable composition comprising at least one ethylenically unsaturated compound and from about 0.1 to 20%, by weight, of a liquid mixture of photoinitiators which consists essentially of 40–60% by weight of 1-benzoylcyclohexanol and 60–40% by weight of benzophenone or benzophenone substituted by one or more alkyl, halogen, alkoxy, alkylthio or alkoxycarbonyl groups, the latter substituted compounds melting below 80° C.

4,609,613

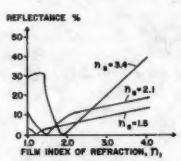
PERMANENT REPRODUCTIONS AND FORMATION METHOD THEREFOR

George R. Cogar, Frankfort, N.Y., and Robert E. Markle, Rancho Palos Verdes, Calif., assignors to Permanent Images, Inc., Herkimer, N.Y.

Continuation of Ser. No. 221,167, Dec. 29, 1980, abandoned. This application Mar. 29, 1984, Ser. No. 595,631

Int. Cl.[4] G03C *5/00, 7/00*

U.S. Cl. 430—320 2 Claims



THIN FILM vs SUBSTRATE INDEX OF REFRACTION

1. A method for forming a permanent reproduction of a half-tone color image comprising:

selecting a substantially reflecting inorganic refractory substrate having a first index of refraction, said substrate being selected from the group consisting of silicon, germanium, gallium arsenide, sapphire, and alumina;

depositing a substantially transparent inorganic thin film coating having a second index of refraction onto said substrate, where the second index of refraction is less than the first index of refraction and said thin film is selected from the group consisting of silicon nitride, silicon monoxide, silicon dioxide, alumina, tantalum oxide, and titanium oxide;

building the deposit of said thin film to a thickness substantially equal to an odd number of quarter wavelengths of the viewing light for determining the color and quality of the resulting image, said thin film thickness being in the range of 50–1000 nanometers;

coating the thin film with a photosensitive mask;

selectively exposing the mask to form the half-tone image in the photosensitive layer;

developing the exposed mask areas; and

etching to produce the desired pattern of openings in the thin film wherein the area of the openings is proportional to the local intensity of the image formed.

4,609,614

PROCESS OF USING ABSORPTIVE LAYER IN OPTICAL LITHOGRAPHY WITH OVERLYING PHOTORESIST LAYER TO FORM RELIEF PATTERN ON SUBSTRATE

Thomas R. Pampalone, Morris County; Ahmad H. Khan, Hudson County, and James J. DiPiazza, Mercer County, all of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jun. 24, 1985, Ser. No. 748,355

Int. Cl.[4] G03F *7/26;* H01L *21/308, 21/312*

U.S. Cl. 430—323 6 Claims

1. A process of forming a relief pattern on a substrate of a multilayer photoresist recording medium consisting of an absorptive layer and a photoresist layer thereover, said process comprising:

(a) coating the substrate with a composition consisting essentially of a solution of a polyfunctional acrylate or methacrylate monomer, a dye having a high absorption at the wavelengths useful to irradiate the photoresist layer and a photoinitiator in a solvent;

(b) curing said composition in two steps comprising irradiating with an irradiation source that will rapidly solidify the composition to form an absorptive layer and baking to remove residual solvent therefrom;

(c) applying a layer of oxygen plasma-resistant photoresist thereover;

(d) pattern irradiating and developing the photoresist layer, thus exposing a portion of the absorptive layer; and

(e) plasma etching the exposed absorptive layer with an oxygen plasma.

4,609,615

PROCESS FOR FORMING PATTERN WITH NEGATIVE RESIST USING QUINONE DIAZIDE COMPOUND

Yoshio Yamashita, and Ryuji Kawazu, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1984, Ser. No. 594,481

Claims priority, application Japan, Mar. 31, 1983, 58-53673; May 2, 1983, 58-76203; Aug. 23, 1983, 58-153818; Aug. 23, 1983, 58-153819; Sep. 6, 1983, 58-163871; Dec. 19, 1983, 58-239295; Dec. 19, 1983, 58-239296

Int. Cl.[4] G03F *7/26*

U.S. Cl. 430—325 5 Claims

1. A process for forming patterns with a negative type resist consisting essentially of the steps of:

forming, on a substrate, a negative type resist film made of a quinone diazide sulfonic ester of a novolak resin having a polymerization degree of 10 or less;

selectively irradiating the thus-formed film with far ultraviolet rays having a wavelength of 180–300 nm to expose said film;

heating the resist film on the substrate to a temperature of 50°–120° C. prior to development; and

developing the film, thus exposed, by the use of a solution of an acetic ester, an alkyl ketone or cyclohexanone and, in addition, water or a mixture of water and alcohol.

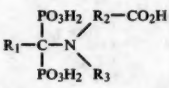
5. A process for forming patterns with a negative type resist wherein a resist film formed on the surface of a substrate is exposed and said substrate with the resist film is heated to a temperature of 50°–120° C. and then developed in a solution of an acetic ester, an alkyl ketone or cyclohexanone and, in addition, water or a mixture of water and alcohol to form resist patterns, said exposure being carried out in such a manner that said resist film, made of a quinone diazide sulfonic ester novolak resin film, is subjected to blanket exposure by means of ultraviolet rays having a wavelength longer than 300 nm, and wherein the resist film, thus exposed, is further subjected to selective exposure by means of far ultraviolet rays having a wavelength of 300 nm or less.

4,609,616
BATH COMPOSITION FOR BLEACHING PHOTOGRAPHIC RECORDING MATERIALS AND BLEACHING PROCESS

Karl Frank, Leverkusen, Fed. Rep. of Germany, assignor to Agfa Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 6, 1985, Ser. No. 708,672
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1984, 3409443
Int. Cl.[4] G03C *5/44, 7/40*
U.S. Cl. 430—430 **6 Claims**

1. Bath composition for bleachin silver halide containing photographic recording materials, which composition contains a hexacyanoferrate as bleaching agent and at least one complex-former comprising as complex-former a compound corresponding the following general formula I:



I

or a salt thereof, wherein

R_1 represents an organic group;

R_2 represents a (poly)methylene group which may be substituted;

R_3 represents hydrogen or an alkyl group which may be substituted or

R_1 and R_3 together represent the group required for completing an azacycloalkane ring.

4,609,617
POLYESTER FILM SUPPORT HAVING EPOXY COPOLYMER COATING FOR PHOTOGRAPHIC USE

Toshiaki Yamazaki, Tachikawa; Takanori Nakadate, Hachioji; Kenichi Kitahara, Hino; Morio Kobayashi, Sagamihara; Noboru Fujimori, Hino, and Ryuji Shimosaki, Tsukui, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Oct. 24, 1983, Ser. No. 544,992
Claims priority, application Japan, Oct. 25, 1982, 57-188013
Int. Cl.[4] G03C *1/76*
U.S. Cl. 430—535 **8 Claims**

1. A support for photographic use comprising a polyester film with at least one surface having a layer provided by coating with an aqueous coating composition, said coating composition comprising about 0.1% to about 40% by weight of a copolymer containing (a) 0.01% to 70% by weight glycidyl acrylate or glycidyl methacrylate with an epoxy-ring-opening ratio of the glycidyl group to the whole amount of epoxy rings of from 5 to 35 mole %; and (b) a monomer polymerizable with said glycidyl group selected from the group consisting of alkylacrylic acid ester, an alkylmethacrylic acid ester, an acrylamide, an N-alkylacrylamide, vinyl chloride, vinylidene chloride, styrene, a styrene derivative, a vinyl ether, a vinyl ester, a diolefin or a combination thereof.

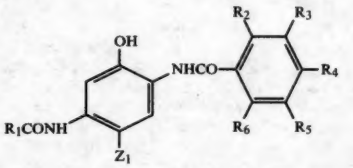
4,609,618
SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Masao Sasaki, and Kaoru Onodera, both of Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 558,785, Dec. 16, 1983, abandoned. This application Dec. 4, 1985, Ser. No. 805,251
Claims priority, application Japan, Dec. 9, 1982, 57-216176
Int. Cl.[4] G03C *7/26, 7/34*
U.S. Cl. 430—546 **20 Claims**

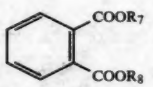
1. A silver halide photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion,

said silver halide emulsion layer containing at least one cyan coupler having the following Formula I, said cyan coupler being dispersed into said silver halide emulsion layer by the use of at least one high-boiling solvent having the Formula II:



I

wherein R_1 is a substituted or unsubstituted alkyl or substituted or unsubstituted aryl; R_3, R_4, and R_5 each is a radical selected from the group consisting of hydrogen, halogen, hydroxyl, nitro, cyano, alkyl, alkoxy, aryl, aryloxy, alkylsulfamoyl, arylsulfamoyl, alkyloxycarbonyl, aryloxycarbonyl, alkylsulfonyl and arylsulfonyl radicals; R_2 and R_6 are each selected from H, halogen, alkyl, and alkoxy; and Z_1 is a hydrogen atom, a halogen atom, or a radical that can be split off by the reaction of said coupler with the oxidized product of an aromatic primary amine-type color developing agent,



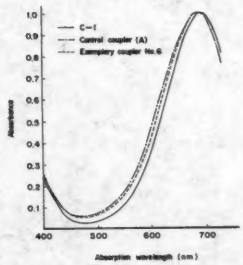
II

wherein R_7 and R_8 each is an alkyl radical, an alkenyl radical or an aryl radical, provided that the sum of the carbon atoms of the radicals represented by R_7 and R_8 is from 16 to 36.

4,609,619
LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

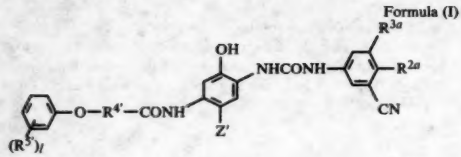
Katsunori Katoh, and Satoshi Nakagawa, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1985, Ser. No. 774,892
Claims priority, application Japan, Sep. 17, 1984, 59-195233; Sep. 21, 1984, 59-198154
Int. Cl.[4] G03C *1/40*
U.S. Cl. 430—553 **14 Claims**



1. A light-sensitive silver halide color photographic material, which comprises containing a cyan coupler for photography represented by the Formula (I) shown below in the light-sensitive emulsion;

Formula (I)



wherein $R^{4'}$ represents an alkylene group having 1 to 20 carbon atoms; $R^{5'}$ represents a halogen atom, a hydroxy group, an alkyl group having 1 to 20 carbon atoms, an alkoxy group, an alkylsulfonamide group, an arylsulfonamide group, an alkylsulfamoyl group, an arylsulfamoyl group, an alkylsulfonyl group, an arylsulfonyl group, a cycloalkyl group, or an alkoxycarbonyl group; l represents an integer of 1 to 4, when l is 2 or more, $R^{5'}$ may be either identical or different; R^{2a} and R^{3a} each represent a hydrogen atom or a halogen atom, at least one of R^{2a} and R^{3a} being a halogen atom; and Z' represents a hydrogen atom or a group eliminable during the coupling reaction with the oxidized product of a color developing agent.

4,609,620

PYRAZOLONE COMPOUNDS AND A PROCESS FOR THEIR MANUFACTURE

Stephen R. Postle, and William E. Long, both of Wilmslow, England, assignors to Ciba Geigy AG, Basel, Switzerland

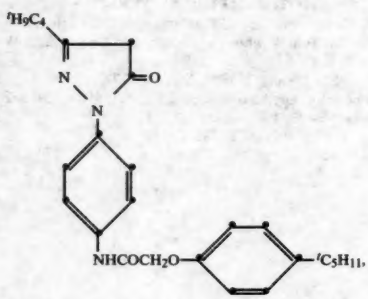
Continuation-in-part of Ser. No. 471,954, Mar. 3, 1983, abandoned. This application Apr. 9, 1985, Ser. No. 721,348

Claims priority, application United Kingdom, Mar. 11, 1982, 8207068

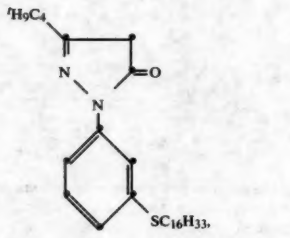
Int. Cl.[4] G03C 7/32

U.S. Cl. 430—554 **1 Claim**

1. Chromogenic, monochrome negative photographic material which comprises in at least one silver halide emulsion layer a pyrazolone compound having a high secondary absorption in the blue region of the visible spectrum, which is at least 54% of the primary absorption, said pyrazolone dye being of the formula



(2)



(3)

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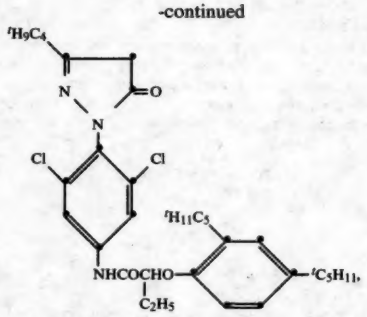
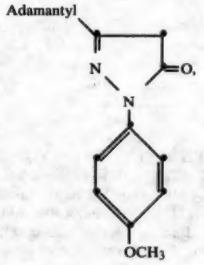
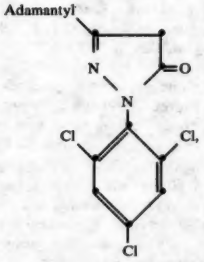


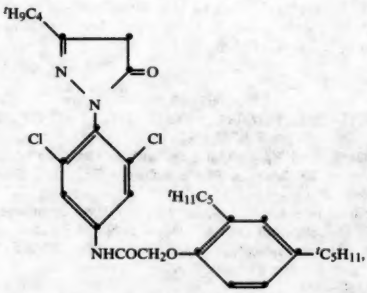
(4)



(5)



(6)



(7)

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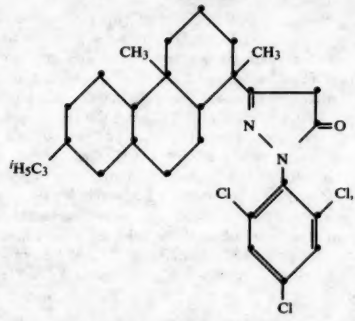
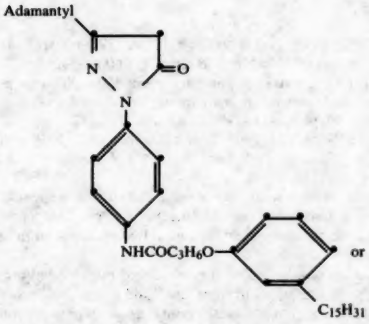
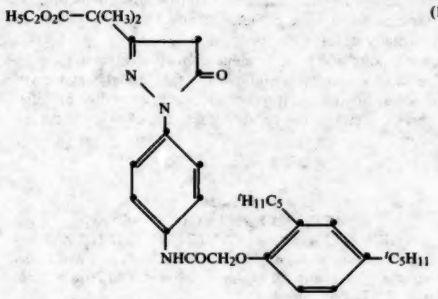
(8)



(9)



(10)



4,609,621

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Tadao Sugimoto; Sumito Yamada; Tadashi Ikeda; Haruo Takei, and Masaki Okazaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 536,044, Sep. 26, 1983, abandoned. This application Mar. 20, 1985, Ser. No. 714,415

Claims priority, application Japan, Sep. 24, 1982, 57/166321

Int. Cl.[4] E03C *1/02, 1/16, 1/12*

U.S. Cl. 430—567 **32 Claims**

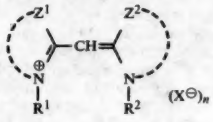
1. A silver halide photographic light-sensitive material, comprising;

a support base having provided thereon;

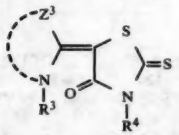
a hydrophilic colloid layer; and

a silver halide emulsion layer containing tabular silver halide grains having a diameter at least three times their thickness and a compound represented by a general formula selected from the group consisting of (I) and (II).

(I)



(II)



wherein Z^1 represents atoms necessary to complete an oxazole, a benzoxazole or a naphthoxazole, Z^2 represents atoms necessary to complete an oxazole, a benzoxazole, a naphthoxazole, a thiazole, a benzothiazole, or a naphthothiazole, Z^3 represents atoms necessary to complete an oxazole, a benzoxazole or a naphthoxazole, R^1, R^2 and R^3 each represents an alkyl group or a substituted alkyl group, R^4 represents an alkyl group, a substituted alkyl group, an aryl group or a substituted aryl group, X represents an acid anion, n represents 0 or 1, and the compound represented by the general formula (II) contains at least one organic acid-substituted alkyl group.

4,609,622

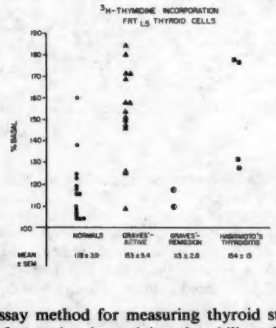
CLINICAL DETERMINATION AND/OR QUANTIFICATION OF THYROTROPIN AND A VARIETY OF THYROID STIMULATORY OR INHIBITORY FACTORS PERFORMED IN VITRO WITH AN IMPROVED THYROID CELL LINE, FRTL-5

Leonard D. Kohn, Bethesda; William A. Valente, Baltimore, both of Md.; Evelyn F. Grollman-Wolff, Great Falls, Va.; Salvatore M. Aloj, Naples, and Paolo Vitti, Leghorn, both of Italy, assignors to Interthyr Research Foundation Inc. and The University of Maryland, both of Baltimore, Md.

Filed May 31, 1983, Ser. No. 499,787

Int. Cl.[4] G01N *33/53;* **C12Q** *1/02;* **C12N** *5/00*

U.S. Cl. 435—29 **86 Claims**



1. An assay method for measuring thyroid stimulatory or inhibitory factors by determining the ability of said thyroid stimulatory or inhibiting factors to cause or prevent, respectively, incorporation of thymidine in a continuous strain of FRTL-5 ATCC CRL 8305 rat thyroid cells capable of surviving thyrotropin withdrawal for a period of up to about 10 days comprising the sequential steps of:

(a) plating said FRTL-5 thyroid cells in a nutrient medium comprising calf serum and thyrotropin;

(b) removing thyrotropin from said plated FRTL-5 thyroid cells;
(c) introducing labeled thymidine, a nutrient medium and at least one of a thyroid stimulator and inhibitory factor, to said plated FRTL-5 thyroid cells;
(d) incubating the mixture of said FRTL-5 thyroid cells, said labeld thymidine, said nutrient medium, and said at least one of a thyroid stimulatory and inhibitory factor;
(e) terminating growth of said FRTL-5 thyroid cells;
(f) recovering said labeled thymidine; and
(g) detecting said labeled thymidine.

4,609,623
MICROBIOLOGICALLY PRODUCED D-2-HYDROXY-4-METHYLPENTANOIC ACID DEHYDROGENASE, PROCESS FOR ITS PRODUCTION AND ITS USE

Wolfgang Leuchtenberger, Bruchkobel; Werner Hümmel, Titz; Maria-Regina Kula, Wolfenbüttel, and Horst Schütte, Salzgitter, all of Fed. Rep. of Germany, assignors to Degussa AG, Frankfurt and Society for Biotechnical Research, Braunschweig-Stockheim, both of, Fed. Rep. of Germany

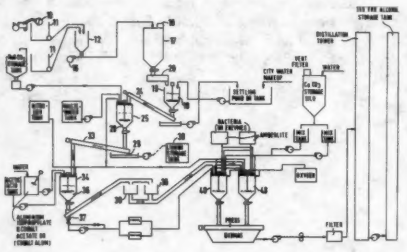
Filed Jun. 6, 1984, Ser. No. 617,738
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1983, 3320495
Int. Cl.[4] C12P *11/00, 7/40, 7/42;* **C12N** *9/02, 9/04;* **C12R** *1/225, 1/245, 1/01*
U.S. Cl. 435—130 **15 Claims**

1. The enzyme D-2-hydroxy-4-methylpentanoic acid-dehydrogenase.

4,609,624
PROCESS FOR PRODUCING ISOPROPYL ALCOHOL FROM CELLULOSIC SUBSTRATES

Henri C. Rothlisberger, Beaulieu sur Mer, France, assignor to Les Services de Consultation D.B. Plus Limitee, Laval, Canada

Filed Feb. 3, 1984, Ser. No. 576,738
Int. Cl.[4] A23K *1/12;* **C12P** *7/04;* **C12R** *1/01;* **D21C** *3/20*
U.S. Cl. 435—157 **14 Claims**



1. A process for producing isopropyl alcohol from cellulosic substrates which includes the steps of:
(a) digesting the cellulosic substrates in a heated solution containing from 30 to 150 grams of sodium carbonate per kilogram of dry weight cellulosic substrates to hydrolize cellulose from lignin in the cellulosic substrates, and separating said hydrolized cellulose from a first black liquid containing said lignin;
(b) digesting the hydrlolized cellulose of step (a) in a heated solution containing about 25 to 55 grams of aluminium isopropylate or 20 to 50 grams of isopropyl alcohol together with 30 to 150 grams of sodium acetate per kilogram of dry weight hydrolized cellulose to produce a biomass and a second black liquid of saturated acyclic hydrocarbons;
(c) mixing the glucose biomass of step (b) with a fermentation initiating agent selected from the group consisting of xylophagous bacteria and amylolytic enzymes, to initiate fermentation of the biomass;
(d) adding the second black liquid of saturated acyclic hydrocarbons obtained in step (b) together with 10 to 30 grams of aluminium acetate and 100 to 200 grams of a mixture of formaldehyde and phenol or sulfonated phenol per kilogram of dry weight glucose biomass to the mixture of step (c), and fermenting by heating the resulting mixture to a temperature ranging from 120° to 160° C. for sufficient time to produce isopropyl alcohol and wherein steps (c) and (d) are conducted under an inert atmosphere when said fermentation initiating agent is bacteria, and under an oxygen-containing atmosphere when said initiating agent is an enzyme, and the selected atmosphere in step (d) has a pressure ranging from 1.5 to 45 kg/cm and;
(e) isolating isopropyl alochol from the liquid resulting from step (d).

4,609,625
PROCESS FOR THE PRODUCTION OF MODIFIED PROTEINS AND PRODUCT THEREOF

Melvin H. Keyes, Sylvania, and Saraswathi Vasan, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 14, 1983, Ser. No. 551,632
Int. Cl.[4] C12N *11/14, 11/02, 11/10, 11/08, 11/06, 9/96, 9/00, 9/16, 9/90, 9/92;* **C07K** *3/08, 17/00*
U.S. Cl. 435—176 **18 Claims**

1. A process for chemically altering the substrate specificity of a cofactor containing native holoprotein to produce a predetermined cofactorless ensyme-like modified protein comprising the steps of:
selecting an enzyme to be modeled, said enzyme having an enzymatic activity different from said native holoprotein;
partially denaturing a cofactor containing native holoprotein by removing the cofactor therefrom by contacting the holoprotein with a cofactor removal agent to produce a partially denatured apoprotein;
cross-linking said partially denatured apoprotein in the presence of a competitive inhibitor of said model enzyme with a cross-linking agent to produce an enzyme-like modified protein having the catalytic activity of said model enzyme.

4,609,626
METHOD FOR PRODUCING S-ADENOSYL-L-HOMOCYSTEINE HYDROLASE

Hideaki Yamada; Sakayu Shimizu, both of Kyoto, and Shozo Shiozaki, Kamakura, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1984, Ser. No. 634,208
Claims priority, application Japan, Jul. 29, 1983, 58-139134
Int. Cl.[4] C12N *9/14;* **C12R** *1/01, 1/05, 1/06, 1/065, 1/465, 1/15, 1/20, 1/32, 1/29, 1/365, 1/38*
U.S. Cl. 435—195 **7 Claims**

1. A method for producing S-adenosyl-L-homocysteine hydrolase, which comprises cultivating a microorganism having the ability to produce S-adenosyl-L-homocysteine hydrolase within its cells in a nutrient medium to accumulate said hydrolase in the cells, said microorganism being a bacterium belonging to the genera Alcaligenes, Pseudomonas, Acinetobacter, Arthrobacter, Enterobacter, Rhodopseudomonas, Agrobacterium, Micrococcus, Corynebacterium, Brevibacterium, Chromobacterium, Xanthomonas, Flavobacterium, Cellulomonas, Azotobacter and Protaminobacter, or an actinomycete belonging to the genera Streptomyces, Mycobacterium, Nocardia, Streptoverticillium, Micromonospora, Micropolyspora, Streptosporangium and Microellobosporia; and then recovering S-adenosyl-L-homocysteine hydrolase from the cells.

4,609,627

ENZYMATIC CONVERSION OF CERTAIN SUB-TYPE A AND AB ERYTHROCYTES

Jack Goldstein, New York, N.Y., assignor to New York Blood Center, Inc., New York, N.Y.

Filed Aug. 1, 1983, Ser. No. 518,980
Int. Cl.[4] C07K *3/00*; A01N *1/02*; C12N *9/24, 9/40*
U.S. Cl. 435—269 17 Claims

1. A composition comprising type B erythrocytes, said erythrocytes characterized by

(a) the absence of A antigenicity,

(b) greater H antigenicity than naturally occurring A_2B cells,

(c) presence of B antigenicity and

(d) 60–90% of the adenosine-5'-triphosphate (ATP) content of naturally occurring A_2B erythrocytes, said composition produced by

(i) equilibrating A_2B erythrocytes to a pH of 5.6 to 5.8;

(ii) thereafter contacting the so-equilibrated erythrocytes with an alpha-N-acetylgalactosaminidase enzyme for a period sufficient to convert the A antigen in said erythrocyte to the H-antigen;

(iii) removing said enzyme from said erythrocytes; and

(iv) re-equilibrating said erythrocytes to a pH of 7.2 to 7.4.

4,609,628

METHOD FOR DETERMINING BINDER CONTENT AND DEGREE OF CURE IN A FIBROUS MAT

David P. Aschenbeck, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 374,564, May 3, 1982, abandoned. This application Jan. 30, 1984, Ser. No. 574,942
Int. Cl.[4] G01J *1/10*; G01N *21/75, 33/44*
U.S. Cl. 436—34 12 Claims

1. A method for determining the degree of cure in a mat of binder-coated mineral fibers, said binder having a first cure indicator constituent, the amount of which changes at a first rate as said binder is cured, and a second cure indicator constituent, the amount of which changes at a second rate, different from said first rate, as said binder is cured, comprising:

(a) radiating said mat and said binder with first, second, third and fourth wavelengths of electromagnetic radiation;

said first wavelength being absorbed by said binder including said first cure indicator constituent;

said second wavelength being a reference for said first wavelength and being substantially not absorbed by either said binder or said first or second cure indicator constituents;

said third wavelength being absorbed by said binder including said second cure indicator constituent;

said fourth wavelength being a reference for said third wavelength and being substantially not absorbed by either said binder or said first or second cure indicator constituents;

(b) sensing the amount of energy of said first, second, third and fourth wavelengths transmitted through said mat and said binder;

(c) determining a first cure-biased value for the amount of binder on said mat from the sensed energy of said first and second wavelengths, and determining a second cure-biased value for the amount of binder on said mat from the sensed energy of said third and fourth wavelengths; and

(d) determining the degree of cure of said binder from said first and second cure-biased values.

7. A method for determining the amount of binder in a mat of binder-coated mineral fibers, said binder having a first cure indicator constituent, the amount of which changes at a first rate as said binder is cured, and a second cure indicator constituent, the amount of which changes at a second rate, different from said first rate, as said binder is cured, comprising:

(a) radiating said mat and said binder with electromagnetic radiation having first, second, third and fourth wavelengths;

said first wavelength being absorbed by said binder including said first cure indicator constituent;

said second wavelength being a reference for said first wavelength and being substantially not absorbed by either said binder or said first or second cure indicator constituents;

said third wavelength being absorbed by said binder including said second cure indicator constituent;

said fourth wavelength being a reference for said third wavelength and being substantially not absorbed by either said binder or said first or second cure indicator constituents;

(b) sensing the amount of energy of said first, second, third and fourth wavelengths transmitted through said mat and said binder;

(c) determining a first cure-biased value for the amount of binder on said mat from the sensed energy of said first and second wavelengths, and determining a second cure-biased value for the amount of binder on said mat from the sensed energy of said third and fourth wavelengths; and

(d) determining the degree of cure of said binder from said first and second cure-biased values.

4,609,629

PROCESS FOR THE IMMUNOLOGICAL DETERMINATION OF PROTEINS IN BODY FLUID WHICH DISPLAY A NON-PARALLEL INHIBITION CURVE TO A REFERENCE INHIBITOR

Rupert Timpl, Gauting, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft Zur Foederung der Wissenschaften E.V., Gottigen, Fed. Rep. of Germany

Filed Aug. 23, 1984, Ser. No. 643,815
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1983, 3331627
Int. Cl.[4] G01N *33/563, 33/577, 33/536*
U.S. Cl. 436—512 16 Claims

1. A process for the immunological determination of a protein selected from the group of consisting procollagen III and laminin P1, in a body fluid sample which displays a non-parallel inhibition curve to a reference inhibitor, comprising the steps of

reacting the body fluid sample with labeled specific monovalent antibody fragments,

measuring the extent of the reaction, and

comparing the results with results obtained by measuring the reaction of the antibody fragments with the reference inhibitor.

4,609,630

METHOD FOR IMPROVING THE SPECIFICITY OF IMMUNOASSAYS

Jorge F. Yanovsky, 290 Ferrari St., 1414 Buenos Aires, Argentina

Filed Feb. 24, 1984, Ser. No. 583,262
Claims priority, application Argentina, Mar. 23, 1983, 292484; Jan. 20, 1984, 295500
Int. Cl.[4] G01N *33/554, 33/555, 33/556*
U.S. Cl. 436—519 5 Claims

1. A method for improving the specificity of agglutination assays for antigens and antibodies using cellular carriers, the improvement comprising adding to the material to be assayed an inhibitor of non-specific agglutination comprising a sugar.

2. The method of claim 1 wherein the inhibitor comprises a sugar and in addition a compound selected from the group consisting of glycerophosphates, sphingomyelins, choline esters, choline salts, and mixtures thereof.

4,609,631

OXYNITRIDE GLASS FIBERS

Donald R. Messier, Burlington; Eileen J. DeGuire, Cambridge, and R. Nathan Katz, Natick, all of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 12, 1985, Ser. No. 775,076
Int. Cl.[4] C03C *13/00, 3/11*
U.S. Cl. 501—35 5 Claims

1. A fiber drawn from an oxynitride glass, said fiber having an elastic modulus in the range from 140 GPa to 185 GPa, wherein said fiber comprises up to 15 atomic percent nitrogen.

4,609,632

GLASS COMPOSITIONS WITH LOW DIELECTRIC LOSSES

Werner Sack, Mainz, Fed. Rep. of Germany, assignor to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Aug. 14, 1985, Ser. No. 765,487
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1984, 3429847
Int. Cl.[4] C03C *3/108, 3/105, 3/118*
U.S. Cl. 501—61 7 Claims

1. A glass consisting essentially of, in analysis oxide weight percent,

SiO_2: 52.50 to 60.20
B_2O_3: 2.80 to 3.80
Al_2O_3: 8.00 to 14.00
PbO: 6.00 to 20.20
CaO: 2.00 to 13.50
MgO: 0 to 3.50
ZnO: 0 to 8.00
BaO: 0 to 4.70
PbO+CaO+MgO+ZnO+BaO: 21.10 to 34.00
F: 0 to 1.00
Sb_2O_3: 0.20 to 0.50

wherein 100 wt. % is exclusive of Sb_2O_3,

and being essentially alkali metal-free and having the following properties: a thermal expansion coefficient in the temperature range from 20° to 300° C. of 3.15 to 4.97×10^{-6}/°C., an acid resistance whereby the glass falls within the third class or better in the acid-resistance table according to DIN 12116, a water stability whereby the glass falls within the first class or better in the water stability table according to DIN 12111, a T_{k100} value of >500° C., a dielectric constant (ε)—measured at 50 and 500 Hz in each case at 20° and 70° C.—of 5.95 to 7.02, a dielectric loss factor (tan δ)—also measured at 50 and 500 Hz at 20° and 70° C. in each case—of 3.94 to 24.9×10^{-4}, a transformation temperature (Tg) of 622° to 663° C., a softening temperature (Ew) of 849° to 898° C., a processing temperature (V_A) of 1132° to 1280° C., and a density (D) of 2.69 to 2.992 g/cm^3.

4,609,633

SILICON NITRIDE SINTERED BODY AND METHOD FOR PREPARING THE SAME

Mikio Fukuhara, Yokohama, and Yoshitaka Maekawa, Sagamihara, both of Japan, assignors to Toshiba Tungaloy Co., Ltd., Kawasaki, Japan

Filed Apr. 20, 1984, Ser. No. 602,555
Claims priority, application Japan, Apr. 22, 1983, 58-71299; May 10, 1983, 58-81334; May 19, 1983, 58-88060
Int. Cl.[4] C04B *35/58*
U.S. Cl. 501—97 6 Claims

1. A silicon nitride sintered body consisting essentially of:

(A) 0.5 to 25% by weight of at least one from the group consisting of a nitride and an oxynitride of a rare earth element selected from the group consisting of scandium, yttrium and lanthanide elements;

(B) 0.5 to 25% by weight of at least oen nitride of an element selected from the group consisting of beryllium, magnesium, calcium, strontium, barium and radium and/or at least one nitride of an element selected from the group consisting of boron, aluminum, gallium, indium and thallium; and

(C) silicon nitride.

6. A method for preparing a silicon nitride sintered body, which comprises the steps of:

(A) obtaining a powder compact or a molded product from a mixed powder consisting essentially

(i) 0.5 to 25% by weight of at least one from the group consisting of a nitride and an oxynitride of a rare earth element selected from the group consisting of scandium, yttrium and lanthanide elements,

(ii) 0.5 to 25% by weight of at least one nitride or an element selected from the group consisting of beryllium, magnesium, calcium, storntium, barium and radium and/or at least one nitride of an element selected from the group consisting of boron, aluminum, gallium, indium and thallium, and

(iii) silicon nitride; and

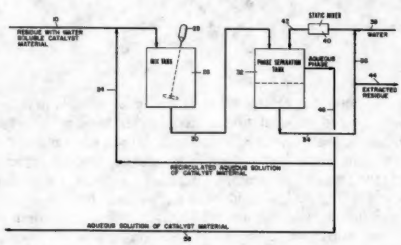
(B) thermally sintering said powder compact or said molded product at a temperature of 1500° or 1900° C. in a non-oxidizing atmosphere.

4,609,634

HIGH EFFICIENCY EXTRACTION METHOD FOR RECOVERING OXIDATION CATALYST MATERIAL FROM DIMETHYL TEREPHTHALATE ESTERIFIED OXIDATE RESIDUE AND THE LIKE

William M. King, Jr., New Hanover County, N.C., assignor to American Hoechst Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 135,844, Mar. 31, 1980, abandoned. This application Jan. 21, 1981, Ser. No. 227,012
Int. Cl.[4] B01J *38/68;* C07C *67/48, 67/08*
U.S. Cl. 502—24 13 Claims



1. A continuous method for the recovery of water-soluble oxidation catalyst material from a water-immiscible organic residue containing the same, in which an aqueous solution of said catalyst material is obtained, which comprises establishing said residue in finely divided dispersion in part of said aqueous solution at a weight ratio of aqueous solution to said residue over 1:1, and maintaining said residue in said dispersion for a period of time sufficient for substantial transfer of said catalyst material from said residue to said aqueous solution, separating in a phase separation zone the dispersion into an aqueous phase and an extracted residue phase, withdrawing extracted residue phase from said separation zone, gently admixing at least half of said extracted residue phase with an aqueous solvent, and introducing the resulting mixture into said phase separation zone, withdrawing as said aqueous solution aqueous phase from said phase separation zone, discharging as extracted residue the remainder of the extracted residue phase, and dis-

charging as an aqueous solution of recovered oxidation catalyst material the remainder of said aqueous solution.

2. A continuous method for the recovery of water-soluble oxidation catalyst material from DMT esterified oxidate residue containing the same, in which an aqueous solution of said catalyst material is obtained, which comprises establishing said residue in finely divided dispersion in part of said aqueous solution at a weight ratio of aqueous solution to said residue over 1:1, and maintaining said residue in said dispersion for a period of time sufficient for substantial transfer of said catalyst material from said residue to said aqueous solution, separating in a phase separation zone the dispersion into an aqueous phase and an extracted residue phase, withdrawing extracted residue phase from said separation zone, gently admixing at least half of said extracted residue phase with an aqueous solvent, and introducing the resulting mixture into said phase separation zone, withdrawing as said aqueous solution aqueous phase from said phase separation zone, discharging as extracted residue the remainder of the extracted residue phase, and discharging as an aqueous solution of recovered oxidation catalyst material the remainder of said aqueous solution.

13. A continuous method for the recovery of water-soluble catalyst material from a water-immiscible organic residue containing the same and inert under the conditions of this method, in which an aqueous solution of said catalyst material is obtained, which comprises establishing said residue in finely divided dispersion in part of said aqueous solution at a weight ratio of aqueous solution to said residue over 1:1, and maintaining said residue in said dispersion for a period of time sufficient for substantial transfer of said catalyst material from said residue to said aqueous solution, separating in a phase separation zone the dispersion into an aqueous phase and an extracted residue phase, withdrawing extracted residue phase from said separation zone, gently admixing at least half of said extracted residue phase with an aqueous solvent, and introducing the resulting mixture into said phase separation zone, withdrawing as said aqueous solution aqueous phase from said phase separation zone, discharging as extracted residue the remainder of the extracted residue phase, and discharging as an aqueous solution of recovered catalyst material the remainder of said aqueous solution.

4,609,635
METHOD FOR THE REGENERATION OF AMMOXIDATION CATALYSTS

Roberto Canavesi, Arese; Ferdinando Ligorati, Usmate, and Roberto Ghezzi, Cusano Milanino, all of Italy, assignors to Enichem Sintesi S.p.A., Palermo, Italy

Filed Apr. 17, 1985, Ser. No. 724,070
Claims priority, application Italy, Apr. 18, 1984, 20587 A/84
Int. Cl.[4] B01J *27/28, 38/66, 38/60;* **C07C** *120/02*
U.S. Cl. 502—26 **10 Claims**

1. Method for regeneration of an ammoxidation catalyst consisting of a granular support and a catalytically active part initially having the formula

$$Mo_aBi_bP_cFe_dCo_eNi_fM_gO_x$$

where:

M is an alkali metal,
a is a number from 9 to 15,
b is a number from 0.3 to 2,
c is a number from 0.5 to 2,
d is a number from 1 to 5,
e is a number from 1 to 5,
f is a number from 1 to 5,
g is a number from 0.01 to 0.5,
x is a number such as to satisfy the valency of the other elements,

which is spent as a result of prolonged exposure to ammoxidation conditions, with concommitant loss of from 2 to 10% of the initial Mo content, characterised in that:

the granules of spent catalyst are impregnated with an aqueous molybdic acid solution, or with an aqueous solution of partially or totally salified molybdic acid in the form of the ammonium salt, with a volume of impregnation solution less than the total pore volume of the catalyst subjected to regeneration, so as to restore at least 50% and up to 100% of the lost molybdenum;

the impregnated granules are dried at a temperature of from 100° to 200° C.;

the dried granules are calcined at a temperature of from 250° to 450° C. in the presence of air, solely in the case of impregnation by an aqueous solution of partially or totally salified molybdic acid.

2. Method according to claim 1, characterised in that the granules of the spent catalyst are impregnated one or more times and the granules are dried after each impregnation.

6. Method according to claim 1, characterised in that the impregnation is carried out with the particles of the catalyst kept under movement in apparatus of the powder-mixer type.

4,609,636
PD/RE HYDROGENATION CATALYST FOR MAKING TETRAHYDROFURAN AND 1,4-BUTANEDIOL

Melinda A. Mabry, Wilmington; William W. Prichard, Hockessin, and Stanislaw B. Ziemecki, Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 564,372, Dec. 22, 1983, Pat. No. 4,550,185.
This application Jun. 4, 1985, Ser. No. 741,264
Int. Cl.[4] B01J *21/18, 23/64;* **C07D** *307/08*
U.S. Cl. 502—183 **20 Claims**

1. A catalyst composite of palladium and rhenium on a carbon support, the composite comprising about 0.5% to 10% of palladium and about 1% to 10% of rhenium by total weight, the palladium being present in the form of crystallites having an average size of about 10 nm to 25 nm and the rhenium being present in the form of a highly dispersed phase of crystallites having an average size of less than about 2.5 nm.

9. A catalyst composite according to claim 1 wherein said palladium and rhenium are deposited on said carbon support with the palladium having been reduced before the rhenium is deposited.

10. A catalyst composite according to claim 1, wherein said catalyst composite is made by the steps, in sequence, of:

(i) impregnating the carbon support with a source of palladium, said palladium being in solution,
(ii) removing the solvent and heating the palladium impregnated carbon at a temperature of about 150° C. to 550° C. under reducing conditions,
(iii) applying to the palladium impregnated carbon a source of rhenium that is in solution,
(iv) removing the solvent, and
(v) heating the catalyst resulting from step (iv) at a temperature of about 150° C. to 550° C. under reducing conditions.

4,609,637
CATALYSTS FOR DIMERIZATION AND PROCESS FOR PREPARING THE CATALYSTS

Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 634,711, Jul. 26, 1984, Pat. No. 4,544,790.
This application Apr. 26, 1985, Ser. No. 727,951
Int. Cl.[4] B01J *23/04, 23/72, 23/78, 27/20*
U.S. Cl. 502—174 **25 Claims**

1. A catalyst consisting essentially of:

(a) at least one alkali metal,
(b) elemental copper, and
(c) potassium carbonate support; wherein components (a) and (b) are supported on component (c).

2. A catalyst consisting essentially of:

(a) at least one alkali metal, (b) elemental copper, (c) elemental cobalt, and (d) potassium carbonate support; wherein components (a), (b) and (c) are supported on component (d).

4,609,638

DEMETALLIZATION OF HYDROCARBON CONTAINING FEED STREAMS

Simon G. Kukes, and Gil R. Hawley, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 575,592, Jan. 31, 1984, Pat. No. 4,557,824.
This application Jun. 17, 1985, Ser. No. 745,552
Int. Cl.[4] B01J *27/14, 27/185*
U.S. Cl. 502—208 **6 Claims**

1. A catalyst composition consisting essentially of zirconium phosphate, cobalt phosphate and iron phosphate.

4,609,639

HETEROPOLYMETALLIC CLUSTERS, METHODS OF MAKING SUCH CLUSTERS, AND CATALYSTS UTILIZING SUCH CLUSTERS

Pierre Braunstein, Strasbourg; Jacques Kervennal, Lyon; Jean-Luc Richert, Schiltigheim, and Michel Ries, Strasbourg, all of France, assignors to ATOCHEM, France

Filed Jan. 14, 1985, Ser. No. 691,453
Claims priority, application France, Jan. 17, 1984, 84 00630
Int. Cl.[4] B01J *23/89*
U.S. Cl. 502—326 **10 Claims**

1. A heteropolymetallic cluster of the formula $Pd_2(Fe)_x(CO)_4[CO(NO)_2]_y[bis(diphenylphosphine)methane]_2$ wherein x is 1 or 2; y is 0 or 1; x=2 when y=1 and x=1 when y=0.

4,609,640

PREPARATION HAVING EXCELLENT ABSORPTION PROPERTY

Masataka Morishita; Renji Aikawa, and Yoshiaki Yamamoto, all of Shizuoka, Japan, assignors to Toyo Jozo Company, Ltd., Japan

Filed Jan. 25, 1982, Ser. No. 342,080
Claims priority, application Japan, Nov. 17, 1981, 56-184861
Int. Cl.[4] C07K *7/10, 7/36*
U.S. Cl. 514—12 **16 Claims**

1. A therapeutic composition for rectal or vaginal administration having excellent absorption properties and containing a therapeutically effective amount of a water soluble therapeutic agent having a partition coefficient of up to 50 in chloroform-/water, and additionally containing from 0.1 to 50 w/w% of a water soluble chelating agent selected from the group consisting of polysaccharide compounds, cellulose compounds, starch compounds, dextrose compounds, polypeptides and synthetic polymers, said agent being capable of chelating calcium or magnesium ions, having a molecular weight of from 1000 to 1,000,000, and containing at least two chelating ligands selected from the group consisting of carboxylic, sulfonic, phosphoric, phenolic, hydroxyl, carbonyl, imino and amino groups.

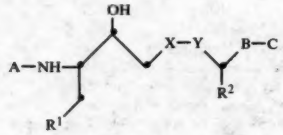
4,609,641

RENIN-INHIBITORY PEPTIDE ANALOGS

Ben E. Evans, and Kenneth E. Rittle, both of Landsdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

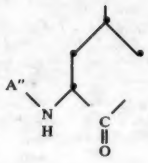
Filed Dec. 3, 1984, Ser. No. 677,431
Int. Cl.[4] A61K *37/64;* **C07K** *5/02, 7/02*
U.S. Cl. 514—16 **4 Claims**

1. A compound having the formula:

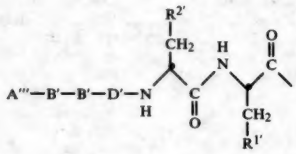


wherein:
A is

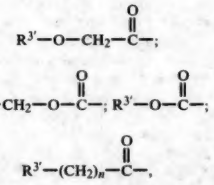
(i)



where:
A″ is hydrogen or phenoxyacetyl;
(ii)

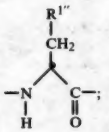


where:
A‴ is hydrogen;

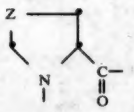


wherein n is 0–5; or

where $R^{3'}$ has the same meaning as set out further below or hydrogen;
B′ is absent; glycyl; or



D′ is absent; or



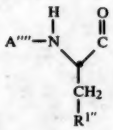
where Z is $(CH_2)_n$ and n is 1 or 2; or —S—;
$R^{1'}$ or $R^{1''}$ is hydrogen; C_{1-4}alkyl; hydroxy C_{1-4}alkyl; phenyl; phenyl mono-substituted with a member selected from the group consisting of methyl, trifluoromethyl, hydroxy, methoxy, fluoro, chloro, bromo, and iodo; indolyl; 4-imidazo-

lyl; amine C_{2-4}alkyl; guanidyl C_{2-3}alkyl; or methylthiomethyl;

$R^{2'}$ is hydrogen; C_{1-4}alkyl; phenyl; phenyl mono-substituted with a member selected from the group consisting of methyl, trifluoromethyl, hydroxy, methoxy, fluoro, chloro, bromo, and iodo; or indolyl; and

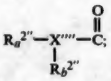
$R^{3'}$ is C_{3-6}alkyl; C_{3-7}cycloalkyl; phenyl; or phenyl mono-substituted with a member selected from the group consisting of methyl, trifluoromethyl, hydroxy, methoxy, fluoro, chloro, bromo, and iodo;

(iii)



where:

A'''' is hydrogen; or



wherein:

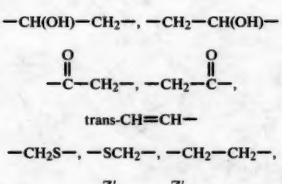
X'''' is

and

$R_a{}^{2''}$ and $R_b{}^{2''}$ are independently hydrogen; $Y'-(CH_2)_n-$ or $Y'-(CH_2)_m-CH=CH-(CH_2)_{p'}$ where Y' is hydrogen; aryl; aryl substituted with up to five members independently selected from the group consisting of C_{1-8}alkyl, trifluoromethyl, hydroxy, C_{1-4}alkoxy, and halo; n is 0 to 5; m is 0 to 2; and p is 0 to 2; except that where X'''' is —O—, only one of $R_a{}^{2''}$ or $R_b{}^{2''}$ is present; and

$R^{1''}$ is hydrogen; C_{1-4}alkyl, provided, that where R^1 is i-propyl, and B is Phe or Tyr, A is other than hydrogen or phenoxyacetyl; hydroxy C_{1-4}alkyl; aryl; aryl substituted with up to three members selected from the group consisting of C_{1-4}alkyl, trifluoromethyl, hydroxy, C_{1-4}alkoxy; fluoro, chloro, bromo, and iodo; indolyl; 4-imidazolyl; amine C_{2-4}alkyl; guanidyl C_{2-3}alkyl; or methylthiomethyl;

X—Y is



wherein

Z' is H, CH_3, $(CH_2)_nB''$, $(CH_2)_n$ C''

wherein

n is 0–4, or

wherein

R_a is C_1–C_6alkyl, ar-C_{1-6}-alkyl, C_{3-7}cycloalkyl; C_{1-6}alkoxy; aryl or heteroaryl;

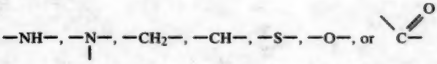
R^1 is C_1–C_4 branched or linear alkyl, C_3–C_6cycloalkyl, phenyl or monosubstituted phenyl where the substituent is OH, Cl, Br, F, CH_3, CF_3, I or OCH_3;

R^2 is hydrogen or

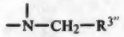
wherein

$R_a{}^5$ and $R_b{}^5$ are independently selected from hydrogen, C_1–C_4alkyl, hydroxy or C_3–C_7cycloalkyl;

B'' is



C'' is NH_2, $NHCH_2R^{3''}$, —NH— or



wherein

$R^{3''}$ is C_3–C_6alkyl, C_3–C_7 cycloalkyl, phenyl or mono-substituted phenyl wherein the substituent is methyl, trifluoromethyl, hydroxy, methoxy, fluoro, chloro, bromo or iodo; and

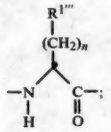
B—C is

wherein R^6 is selected from:

(a) OR; NHR; or NR_2, where each R is independently hydrogen or C_{1-4}alkyl;

(b) B''''—E wherein

B'''' is absent; glycyl;



wherein

n is 1 or 2; or —S—;

$R^{1'''}$ is hydrogen; C_{1-4}alkyl; hydroxy C_{1-4}alkyl; phenyl; phenyl mono-substituted with a member selected from the group consisting of methyl, trifluoromethyl, hydroxy, methoxy, fluoro, chloro, bromo, and iodo; indolyl; 4-imidazolyl; amine C_{2-4}alkyl; guanidyl C_{2-3}alkyl; or methylthiomethyl; and

E is OR; NHR, or $N(R)_2$, where each R is independently hydrogen or C_{1-4}alkyl; and

(c) B^*—D—E wherein

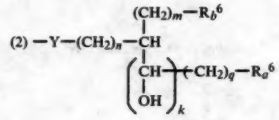
B^* is $—Y—(CH_2)_n—R^{6a}$ (1)

where

Y is —NH— or —O—;

n is 0 to 5; and

R^{6a} is hydrogen, hydroxy; C_{1-4}alkyl; C_{3-7}cycloalkyl; aryl; aryl substituted with up to five members independently selected from the group consisting of C_{1-6}alkyl, trifluoromethyl, hydroxy, C_{1-4}alkoxy, amino, mono- or di-C_{1-4}alkylamino, and halo; amino; mono-, di-, or tri-C_{1-4}alkylamino; guanidyl; heterocyclic; or heterocyclic substituted with up to five members independently selected from the group consisting of C_{1-6}alkyl, hydroxy, trifluoromethyl, C_{1-4}alkoxy, halo, aryl, aryl C_{1-4}alkyl, amino, and mono- or di-C_{1-4}alkylamino;



where

Y is as defined above;

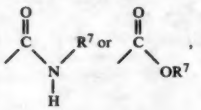
n is 0 or 1;

k is 0 or 1;

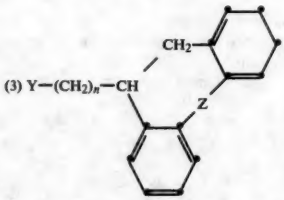
q is 1 to 4;

m is 1 to 4. and

R_b^6 and R_a^6 are each independently the same as R^{6a} above and R_a^6 may additionally be



where R^7 is hydrogen or C_{1-3}alkyl;

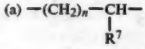


where

Y is as defined above;

n is 0 or 1; and

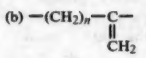
Z is



where

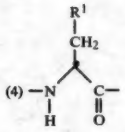
n is 0 or 1; and

R^7 is as defined above; or



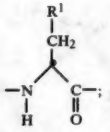
where

n is 0 or 1; or



where R^1 is as defined above;

D is absent; glycyl; sarcosyl; or



and

E is absent; OR; NHR; or $N(R)_2$, where R is independently hydrogen or C_{1-4}alkyl;

(d) $—Y—(CH_2)_n—R_a^6$

where

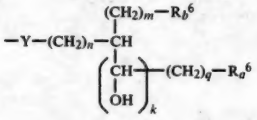
Y is —NH— or —O—;

n is 0 to 5; and

R_a^6 is hydrogen;

C_{1-3}alkyl; C_{3-7}cycloalkyl; naphthyl; phenyl; phenyl substituted with up to five members independently selected from the group consisting of methyl, trifluoromethyl, hydroxyl, methoxy, amino, fluoro, chloro, bromo, and iodo; imidazolyl; pyridyl; pyrryl; hydroxyl; amino; C_{1-4}alkyl mono-, di-, or tri-substituted amino; guanidyl; piperidyl; tetrahydropyrryl; or N-substituted piperidyl or tetrahydropyrryl where the N-substituent is a member selected from the group consisting of hydrogen, C_{1-6}alkyl, C_{1-6}hydroxyalkyl, phenyl, benzyl, naphthyl, and naphthylmethyl;

(e)



where

Y is as defined above;

n is 0 or 1;

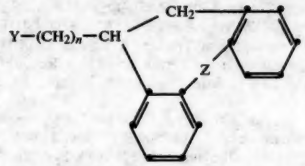
k is 0 or 1;

q is 1 to 4;

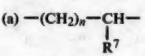
m is 1 to 4; and

R_b^6 and R_a^6 are each independently the same as R^{6a} above; or

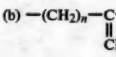
(f)



where
Y is as defined above;
n is 0 or 1; and
Z is



where
n is 0 or 1; and
R^7 is hydrogen or
C_{1-3}alkyl; or



where
n is 0 or 1;
and pharmaceutically acceptable salts thereof.

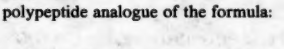
4,609,642
Patent Not Issued For This Number

4,609,643
RENIN INHIBITORS, TREATMENTS AND DIPEPTIDE SYNTHESIS

Michael Szelke, Ruislip; David M. Jones, Hayes, and Allan Hallett, Cheam, all of England, assignors to Aktiebolaget Hassle, Sweden

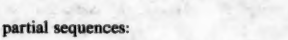
Continuation of Ser. No. 469,540, Feb. 7, 1983, which is a continuation-in-part of Ser. No. 290,620, Aug. 5, 1981, Pat. No. 4,424,207. This application Nov. 13, 1984, Ser. No. 670,671
Claims priority, application United Kingdom, Aug. 6, 1980, 8025579; Jun. 12, 1981, 8118194; European Pat. Off., Feb. 10, 1982, 81303585.4
Int. Cl.[4] A61K *37/64;* **C07K** *5/02, 7/02*
U.S. Cl. 514—16 **7 Claims**

1. A polypeptide analogue of the formula:



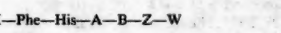
(V)

or the partial sequences:

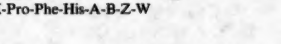


(V)(i)

(V)(ii)

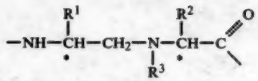


(V)(iii)



(V)(iv)

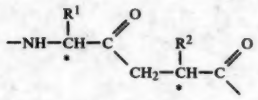
where:
Pro, Phe and His are in substituted form; Pro by OH, Phe by OH, F, Cl, Br or Me, His by Me; or Phe is replaced by pGlu, Phe by Tyr or His by spinacin.
X=H; or an N-protecting group;
Y=D- or L-His or is absent;
A=



(VI)

"reduced" isostere bond

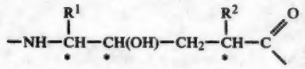
or



(VII)

"keto" isostere bond

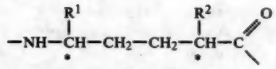
or



(VIII)

"hydroxy" isostere bond

or



(IX)

"hydrocarbon" isostere bond

where the configuration at asymmetric centres * is either R or S, where in VIII the hydroxy group and protected in ether —OR^4 or ester

form where R^4 is as given under W below and where R^1 and R^2, the same or different=^{i}Pro (isopropyl), ^{i}Bu (isobutyl) or Bzl (benzyl);
R^3=H or an N-protecting group;
B=D- or L-Val Leu or Ile;
Z=D- or L-Tyr, Phe, or His; and
W=(i)—OH and in protected ester form as —OR^4 where R^4=lower alkyl C_1-C_5; or (ii)—NH_2 and in protected amide form as —NHR^5 or —$N(R^5)_2$, wherein R^5=an N-protecting group; or (iii) an L- or D-serine or L- or D-lysine or arginine and in amide form, or (iv) an amino alcohol residue derived therefrom as such or protected in ester or ether form

or

Z+W=an alcohol derived from L- or D-Tyr, Phe or His residue and protected in ester or ether form;

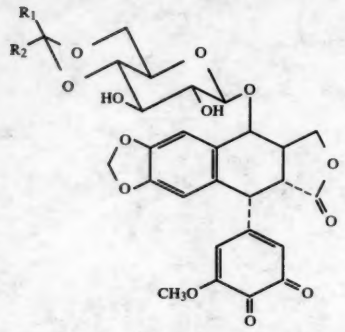
isosteric links as set out above for A being in free form or in protected form at one or more nitrogen, carboxyl, hydroxy or other reactive groups or in salt form at amino imidazole or carboxyl groups as their physiologically acceptable acid addition salts at basic centres.

4,609,644
EPIPODOPHYLLOTOXINQUINONE GLUCOSIDE DERIVATIVES, METHOD OF PRODUCTION AND USE

Josef Nemec, Memphis, Tenn., assignor to St. Jude Children's Research Hospital, Memphis, Tenn.

Filed Jun. 15, 1984, Ser. No. 620,844
Int. Cl.[4] A61K *31/70;* **C07H** *15/26*
U.S. Cl. 514—27 **9 Claims**

1. A compound having the structural formula:



wherein R_1 is hydrogen and R_2 is selected from branched and straight-chain lower alkyls having one to eight carbon atoms; branched and straight-chain alkenyls having two to eight carbon atoms; 5 or 6 membered cycloalkyl; 2-furyl; 2-thienyl; aryl, aralkyl, or aralkenyl radical wherein the aromatic ring may be mono- or di-substituted by one or more groups comprising halide, lower alkyl, lower alkoxy, hydroxy, nitro, amine, phenylalkyl wherein the alkyl group contains one to four carbon atoms, and phenylalkyl wherein the alkenyl group contains two to four carbon atoms; or R_1 and R_2 are each an alkyl radical, or R_1 and R_2, together with the carbon atom to which they are attached, are a saturated cycloaliphatic ring having five or six carbon atoms.

9. A method for inhibiting the growth of cancer cells in an animal comprising administering to said animal an effective amount of a compound according to claim 1, wherein said cancer cells are selected from the group consisting of leukemia cells and sarcoma cells.

4,609,645

MACROLIDE ANTIBIOTICS, PHARMACEUTICAL COMPOSITIONS AND METHODS OF USE

Satoshi Omura, 12-7 Seta 5-Chome, Setagaya-Ku, Tokyo, Japan

Filed Mar. 26, 1984, Ser. No. 593,461

Claims priority, application Japan, Mar. 30, 1983, 58-54677

Int. Cl.[4] A61K *31/71;* **C07H** *17/08*

U.S. Cl. 514—30 **16 Claims**

1. PTL-448-A, which has the following physicochemical properties:

(a) Elemental analysis (approximate values)
C(%) 63.73
H(%): 9.85
N(%): 2.92

(b) Melting point: 108°–110° C.

(c) Molecular formula: $C_{48}H_{82}N_2O_{14}$

(d) Molecular weight: 910

(e) Optical rotation $[\alpha]_D^{22}+40.0°$ (c=1, $CHCl_3$)

(f) ^{13}C-NMR spectrum (in $CDCl_3$) Chemical shift values (ppm): 202.3, 171.1, 170.8, 137.1, 135.9, 133.0, 128.8, 104.2, 101.1, 96.4, 80.5, 79.1, 76.4, 74.8, 73.8, 73.3, 71.7, 70.1, 69.4, 68.8, 66.1, 44.0, 42.0, 41.0, 40.7, 38.9, 37.8, 34.3, 31.3, 30.7, 25.4, 25.0, 21.4, 19.1, 19.0, 18.5, 18.3, 16.8, 15.9, 12.7, 10.0, 9.5

and its acid-additions salts.

9. A method for treating susceptible bacterial or Mycoplasma infections in warm-blooded animals which comprises administering to the animal an effective amount of PTL-448 derivative A as described in claim 1 or a pharmaceutically-acceptable salt thereof.

4,609,646

2-(THI)OXO-1,3,2-OXAZAPHOSPHOLANES AS SYNERGIZING AGENTS FOR PESTICIDES

Hellmut Hoffmann; Bernd-Wieland Krüger, both of Wuppertal, and Wolfgang Behrenz, Overath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 401,461, Jul. 26, 1982, Pat. No. 4,473,558, which is a division of Ser. No. 202,906, Nov. 3, 1980, Pat. No. 4,387,060. This application Feb. 17, 1984, Ser. No. 581,470

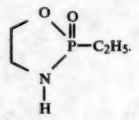
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, 2945036; Nov. 8, 1979, 2945101

The portion of the term of this patent subsequent to Sep. 25, 2001, has been disclaimed.

Int. Cl.[4] A01N *57/36;* **C07F** *9/24*

U.S. Cl. 514—77 **5 Claims**

1. 2-Ethyl-2-thiono-1,3,2-oxazaphospholane of the formula



2. In a synergistic insecticidal and acaricidal composition comprising (1) an insecticidally and acaricidally active compound and (2) a synergizing agent in amount sufficient to synergize the insecticidal and acaricidal activity of the insecticidally and acaricidally active compound, the improvement which comprises employing as the synergizing agent the compound according to claim 1.

3. A method of combating pests comprising applying to the pests or a habitat thereof a pesticidally effective amount of a composition according to claim 2.

4,609,647

CYTIDYL DIPHOSPHOCHOLINE-DRUG COMPOSITION AND PROCESS

John H. Growdon, Brookline, and Richard J. Wurtman, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 738,001, May 28, 1985, abandoned, which is a continuation-in-part of Ser. No. 366,888, Apr. 8, 1982, Pat. No. 4,430,330, which is a continuation of Ser. No. 229,894, Jan. 30, 1981, abandoned, which is a continuation of Ser. No. 126,124, Feb. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 88,227, Oct. 25, 1979, abandoned, which is a continuation of Ser. No. 847,967, Nov. 2, 1977, abandoned. This application Oct. 9, 1985, Ser. No. 785,928

Int. Cl.[4] A61K *31/685*

U.S. Cl. 514—78 **1 Claim**

1. The process of treating a human patient afflicted with a condition associated with inadequate release of brain acetylcholine which comprises administering to the patient cytidyl diphosphocholine at a dosage sufficient to increase brain choline levels and blood levels of choline to between about 10 to 50 n moles/ml.

4,609,648

HALOGENOALKYLCARBAMIC ACID ESTER PESTICIDES

Michael Schwamborn, Cologne; Hermann Hagemann, Leverkusen; Gerhard Heywang, Bergisch Gladbach, and Wolfgang Behrenz, Overath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

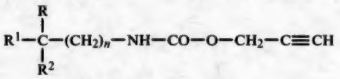
Filed Jul. 13, 1984, Ser. No. 630,492

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1983, 3326873

Int. Cl.[4] C07C *125/065;* A01N *47/10*

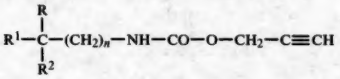
U.S. Cl. 514—84 12 Claims

1. A halogenoalkylcarbamic acid ester of the formula



in which R, R^1 and R^2 independently of one another represent methyl which is optionally substituted by fluorine or chlorine, at least one of the methyl groups R, R^1 and R^2 being substituted by at least one fluorine or chlorine atom, and n represents 0 or 1.

11. A method of combating arthropods which comprises administering to such arthropods or to an arthropod habitat an arthropodically effective amount of a composition comprising an arthropodically effective amount of a known arthropodicide plus a synergistically effective amount of a halogenoalkylcarbamic acid ester of the formula



in which R, R^1 and R^2 independently of one another represent methyl which is optionally substituted by fluorine or chlorine, at least one of the methyl groups R, R^1 and R^2 being substituted by at least one fluorine or chlorine atom, and n represents 0 or 1.

4,609,649

PESTICIDAL COMPOSITIONS EMPLOYING A SYNERGISTIC COMBINATION OF ENDOSULFAN AND PROFENOFOS

Volker Dittrich, Zeiningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

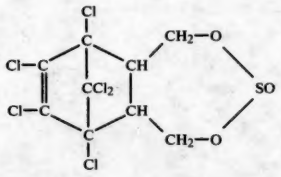
Filed Jul. 22, 1985, Ser. No. 757,700

Claims priority, application Switzerland, Jul. 31, 1984, 3700/84

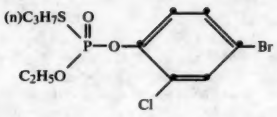
Int. Cl.[4] A01N *57/10*

U.S. Cl. 514—147 5 Claims

1. A pesticidal composition which contains an effective amount of the active component, a combination of 1 part of the compound of the formula



and 9 parts of the compound of the formula



and a carrier.

4,609,650

DOUBLE ESTER OF 16β-ETHYLESTRAN-17β-OL DERIVATIVES

Yoshinobu Yoshimura; Yoko Nishida, both of Ibaraki, and Takatsuka Yashiki, Takarazuka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

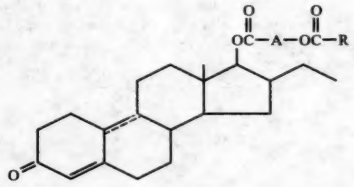
Filed Mar. 27, 1984, Ser. No. 594,034

Claims priority, application Japan, Mar. 31, 1983, 58-57227

Int. Cl.[4] C07J *1/00;* A61K *31/56*

U.S. Cl. 514—178 7 Claims

7. A pharmaceutical preparation containing a steroid compound of the formula:



wherein A is a lower alkylene group;

is an acyl group; and ==== means a single bond or a double bond.

4,609,651

11β-ARYLESTRADIENES, THEIR PRODUCTION, AND PHARMACEUTICAL PREPARATIONS CONTAINING SAME

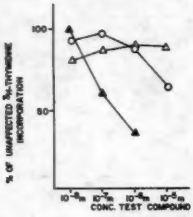
Ralph Rohde, Berlin; Klaus Annen, Münster-Albachten; Gunter Neef, Berlin; Rudolf Wiechert, Berlin; Sybille Beier, Berlin; Walter Elger, Berlin, and David Henderson, Berlin, all of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Dec. 21, 1984, Ser. No. 685,088

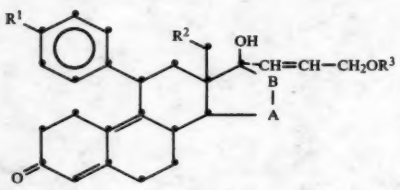
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1983, 3347126

Int. Cl.⁴ A61K *31/56*

U.S. Cl. 514—179 **40 Claims**



1. An 11β-arylestradiene of the formula



wherein

R^1 is hydrogen,

wherein R^I and R^{II} each independently is hydrogen, alkyl of 1–4 carbon atoms, or alkanoyl of 1–8 carbon atoms, or R^I and R^{II} together with the connecting N-atom form a 5- or 6-membered saturated ring, the remaining atoms all being C-atoms or one being another N-atom or an O or S atom, a pyrrole ring being optionally substituted by 1–4 methyl groups;

a corresponding N-oxide

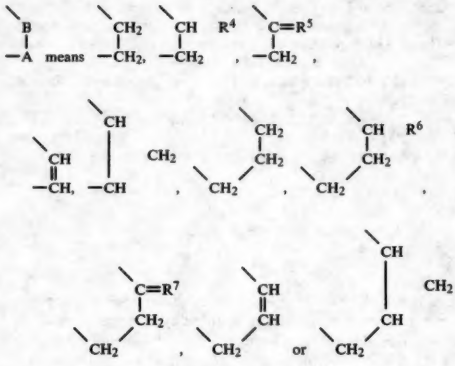
—OR^{III}, wherein R^{III} is hydrogen, methyl, ethyl, propyl, methoxyphenyl, allyl, or dimethylaminoethyl,

—SR^{IV}, wherein R^{IV} is hydrogen, methyl, ethyl, propyl, or dimethylaminoethyl, or

—SiR_3^V, wherein R^V is methyl, ethyl, propyl, butyl, or benzyl,

R^2 is a hydrogen atom, a methyl group, or an ethyl group,

R^3 is a hydrogen atom or an alkanoyl group of 1–8 carbon atoms, and



wherein R^4 and R^6 each mean alkyl of 1–4 carbon atoms in the α- or β-position, and R^5 and R^7 each mean C_{1-4}-alkylidene in the E- or Z-configuration, and

the C_{20}/C_{21}-double bond has a Z- or E-configuration, or a pharmacologically acceptable acid addition salt thereof when the compound is basic.

30. An antigestational composition comprising an antigestationally effective amount of a compound according to claim 1 and a pharmaceutically acceptable carrier.

4,609,652

METHODS OF USING β-LACTAM ANTIBACTERIAL AGENTS

Peter H. Milner, Horsham, England, assignor to Beecham Group p.l.c., England

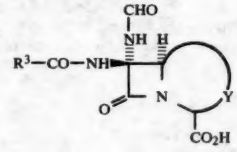
Division of Ser. No. 401,266, Jul. 23, 1982, Pat. No. 4,539,149. This application Jan. 24, 1985, Ser. No. 694,592

Claims priority, application United Kingdom, Jul. 25, 1981, 8123033; Jul. 25, 1981, 8123034; Dec. 7, 1981, 8136823; Dec. 7, 1981, 8136824; Mar. 18, 1982, 8207966; Apr. 3, 1982, 8209953; Apr. 3, 1982, 8209954; May 22, 1982, 8215007

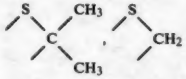
Int. Cl.⁴ A61K *31/43, 31/545*

U.S. Cl. 514—194 **32 Claims**

1. A method of treating bacterial infections in humans and animals which comprises administering to a human or animal in need thereof an antibacterially effective amount of a compound of the formula (II) or a pharmaceutically acceptable salt or in-vivo hydrolyzable ester thereof:



wherein Y is:



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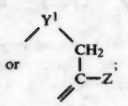


wherein Y^1 is oxygen, sulphur or $—CH_2—$ and Z is hydrogen, halogen, alkoxy of 1 to 4 carbon atoms, $—CH_2Q$ or $—CH=CH—Q$ wherein Q is hydrogen, halogen, hydroxy, mercapto, cyano, carboxy, carboxylic ester, alkoxy of 1 to 4 carbon atoms, acyloxy, aryl, a heterocyclyl group bonded via a carbon atom, a heterocyclylthio group or a nitrogen containing heterocyclic group bonded via a nitrogen atom; and R^3 is a group such that $R^3—CO—NH$ is an acylamino group, in combination with a pharmaceutically acceptable carrier.

4,609,653

CRYSTALLINE CEPHEM-ACID ADDITION SALTS AND PROCESSES FOR THEIR PREPARATION

Walter Dürckheimer, Hattersheim am Main, and Rudolf Lattrell, Königstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

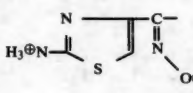
Filed Dec. 27, 1983, Ser. No. 565,867

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1982, 3248281

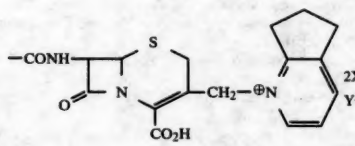
Int. Cl.⁴ A61K *31/545;* **C07D** *501/40*

U.S. Cl. 514—202 **3 Claims**

1. A crystalline cephem-acid addition salt of the formula I or the monohydrate thereof



I



in which

X^- represents a chloride, bromide, iodide, or hydromaleate anion in formula Ia and

Y^{2-} represents a sulfate anion in formula Ib.

3. The use of a crystalline cephem compound of the Formula I as defined in claim **1** for combating bacterial infection.

4,609,654

DERIVATIVES OF CEPHALOSPORINS SUBSTITUTED IN 3 POSITION BY A THIOMETHYL HETEROCYCLE GROUP; AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Bernard Labeeuw, Montpellier, and Ali Salhi, Saint-Gely-du-Fesc, both of France, assignors to Sanofi, Paris, France

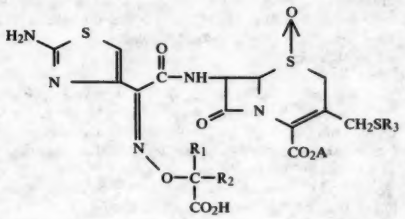
Filed Nov. 23, 1982, Ser. No. 443,933

Claims priority, application France, Dec. 1, 1981, 81 22506

Int. Cl.⁴ C07D *501/46;* **A61K** *31/545*

U.S. Cl. 514—206 **6 Claims**

1. A cephalosporin having the formula:

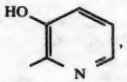


wherein

R_1 and R_2, taken separately, each represent a methyl group or

R_1 and R_2 taken together represent at 1,3-propylene group,

R_3 is a hydroxypyridyl group of formula



and

A is selected from the group consisting of

hydrogen;

alkali metal ions;

substituted ammonium ions resulting from protonation of an amine selected from the group consisting of ethylene diamine, ethanolamine, tromethamine, lysine, arginine, and acetylcysteine;

tertiary butyl; and

organic radicals selected from the group consisting of phthalidy, pivaloyloxymethyl, acetoxymethyl, ethoxycarbonyloxymethyl, 1-(ethoxycarbonyloxy)-ethyl, acetonyl, α-methoxy-α-carbomethoxymethyl, carbomethoxymethyl, and carbethoxymethyl;

or a pharmaceutically acceptable acid addition salt of the compound in which A is H, tertiary butyl, or said organic radicals.

4,609,655

ANTI-ULCER IMIDAZO-QUINOLINE, INDOLE AND BENZAZEPINE DERIVATIVES

Roger Crossley, Berkshire, England, assignor to John Wyeth & Brother, Ltd., Maidenhead, England

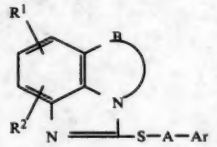
Continuation-in-part of Ser. No. 677,789, Dec. 4, 1984, abandoned. This application Sep. 6, 1985, Ser. No. 772,990

Claims priority, application United Kingdom, Dec. 16, 1983, 8333581

Int. Cl.⁴ C07D *471/06, 487/06;* **A61K** *31/415*

U.S. Cl. 514—214 **9 Claims**

1. A compound of formula I



wherein

A is a C_1–C_4 straight or branched alkylene chain which may be saturated or unsaturated;

B is a C_2–C_4 straight or branched alkylene chain which may be saturated or unsaturated;

Ar is a phenyl or naphthyl group which may be mono or

polysubstituted with halogen, C_1–C_6-alkoxy, C_7–C_{12}-aralkoxy, hydroxy, C_1–C_6-hydroxyalkyl, C_1–C_6-alkoxyalkyl, trifluoromethyl, C_1–C_6-alkyl, phenyl, naphthyl or C_7–C_{12}-aralkyl or disubstituted with a C_1–C_6-alkylene dioxy radical;

R^1 and R^2 are the same or different and are hydrogen, C_1–C_6-alkyl, C_1–C_6-alkoxy, C_1–C_6-alkoxyalkyl, C_1–C_6-hydroxyalkyl, hydroxy, halogen, nitro, carboxy, C_1–C_6-alkanoylamino, C_1–C_6-alkoxycarbonyl, carbamoyl, carbamoyloxy, cyano, C_1–C_6-alkanoyl or trifluoromethyl, or an acid addition salt thereof.

7. A method of treating ulcers or hypersecretion in a mammal in need of such treatment which method comprises treating said mammal with an anti-ulcer or anti-hyper-secretion effective amount of a compound as claimed in claim 1 or an acid addition salt thereof.

4,609,656
MEDICAL AGENT FOR IMPROVING AND TREATING MENTAL SYMPTOMS INDUCED BY CEREBRAL DISTURBANCES

Minoru Yamamoto, Kanagawa, and Masatomi Harada, Saitama, both of Japan, assignors to Yamanouchi Pharmaceutical Co. Ltd., Tokyo, Japan

Filed Jul. 24, 1985, Ser. No. 758,500
Claims priority, application Japan, Dec. 19, 1984, 59-267665
Int. Cl.[4] A61K *31/535*
U.S. Cl. 514—239 **5 Claims**

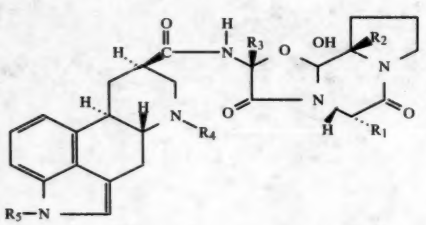
1. A method of improving and treating mental symptoms in a host wherein the mental symptoms are decrease of spontaneity and motivation, emotional disturbance, sleep disturbance and abnormal behavior, which are induced by functional disturbance of the brain, and which are symptoms without decrease of intellectual function, said method comprising administering to said host a pharmaceutically effective amount for improving said mental symptoms, of 2-(7-indenyloxymethyl)-morpholine or an acid addition salt thereof and a pharmaceutically acceptable carrier.

4,609,657
ERGOT PEPTIDE ALKALOID DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Paul Stadler, Biel-Benken, and Franz Troxler, Bottmingen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 3,757, Jan. 15, 1979, abandoned. This application Jul. 14, 1980, Ser. No. 168,567
Claims priority, application Switzerland, Jan. 20, 1978, 622/78
Int. Cl.[4] A61K *31/48*; C07D *519/02*
U.S. Cl. 514—250 **10 Claims**

1. A compound of formula I



I

wherein

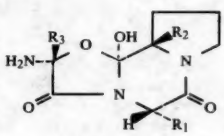
R_1 is benzyl or benzyl substituted by hydroxy, chlorine, fluorine, amino, amido, (C_{2-5})alkanoylamino, (C_{1-4})alkyl, (C_{1-4})alkylamino, (C_{1-4})alkylamido, di[(C_{1-4})alkyl]amino, or di[(C_{1-4})alkyl]amido,

R_2, R_4 and R_5 are each (C_{1-4})alkyl, and

R_3 is (C_{3-4}) branched chain alkyl or a pharmaceutically acceptable acid addition salt thereof.

5. A pharmaceutical composition useful in stimulating prolactin secretion which comprises a therapeutically effective amount of a compound of claim 1 in association with a pharmaceutical carrier or diluent.

7. A compound of formula II



II

wherein

R_1 is benzyl or benzyl substituted by hydroxy chlorine, fluorine, amino, amido, (C_{2-5})alkanoylamino, (C_{1-4})alkyl, (C_{1-4})alkylamino, (C_{1-4})alkylamido, di[(C_{1-4})alkyl]amino, or di[(C_{1-4})alkyl]amido,

R_2 is (C_{1-4})alkyl, and

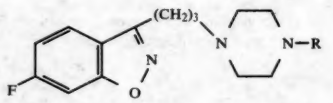
R_3 is (C_{3-4}) branched chain alkyl, or an acid addition salt thereof.

4,609,658
1-[3-(6-FLUORO-1,2-BENZISOXAZOL-3-YL)PROPYL]-4-(SUBSTITUTED) PIPERAZINES USEFUL FOR REDUCING BLOOD PRESSURE

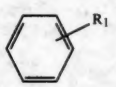
Larry Davis, Sergeantsville, and Joseph T. Klein, Somerville, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 366,248, Apr. 9, 1982, Pat. No. 4,536,578. This application Jun. 7, 1985, Ser. No. 742,496
Int. Cl.[4] A61K *31/495*; C07D *401/04, 413/06*
U.S. Cl. 514—253 **1 Claim**

1. A method of reducing blood pressure comprising administering to a mammal in need of blood pressure reduction a blood pressure reducing effective amount of a compound of the formula



wherein R is loweralkyl, benzyl, 2-hydroxyethyl, prydiyl or a group of the formula



wherein R_1 is hydrogen, loweralkyl, loweralkoxy, halogen or trifluoromethyl; the optical antipodes thereof; or pharmaceutically acceptable acid addition salts thereof.

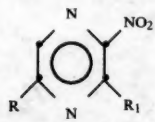
4,609,659

2,6-DISUBSTITUTED DERIVATIVES OF 3-NITROPYRAZINES USEFUL AS ADJUNCTS TO RADIATION THERAPY

George D. Hartman, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 16, 1985, Ser. No. 691,777
Int. Cl.[4] C07D *241/16, 241/24;* A61K *31/495*
U.S. Cl. 514—255 12 Claims

1. A nitropyrazine compound of the formula

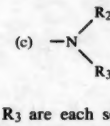


I

wherein R and R_1 are each selected from the group consisting of

(a) hydrogen;

(b) carboalkoxy in which the alkoxy group has from 1–3 carbon atoms;



wherein R_2 and R_3 are each selected from the group consisting of hydrogen, methyl and lower alkyl substituents of from 2 to 6 carbon atoms, said alkyl substituent having from 1–4 of the alkyl carbons substituted with a hydroxy or methoxy substituent provided that the alkyl carbon attached to the amino nitrogen has no hydroxy or methoxy substituents;

and provided that at least one of the R and R_1 substituents is a substituent other than hydrogen.

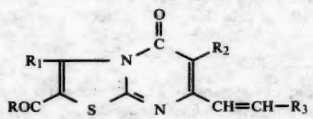
4,609,660

SUBSTITUTED CARBOXY-THIAZOLO[3,2-A]PYRIMIDINE DERIVATIVES

Gianfederico Doria, Milan; Carlo Passarotti, Gallarate, and Maria L. Corno, Milan, all of Italy, assignors to Farmitalia Carlo Erba, S.p.A., Milan, Italy

Division of Ser. No. 569,693, Jan. 11, 1985, Pat. No. 4,558,046.
This application Jun. 21, 1985, Ser. No. 747,436
Claims priority, application United Kingdom, Jan. 12, 1983, 8300728
The portion of the term of this patent subsequent to Dec. 10, 2002, has been disclaimed.
Int. Cl.[4] A61K *31/505;* C07D *513/02*
U.S. Cl. 514—258 6 Claims

1. A compound of formula (I)



(I)

wherein

R is

(a) hydroxy;

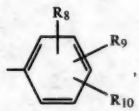
(b) a C_1–C_6 alkoxy group unsubstituted or substituted by a

group, wherein each of R_4 and R_5 independently is a hydrogen atom or a C_1–C_6 alkyl group, or R_4 and R_5, taken together with the nitrogen atom to which they are linked, form an unsubstituted N-pyrrolidinyl or morpholino ring;

R_1 is a hydrogen atom or C_1–C_6 alkyl;

R_2 is a hydrogen or a halogen atom or a C_1–C_4 alkyl group;

R_3 is a 2-,3- or 4-pyridyl ring, each of which is unsubstituted or substituted by C_1–C_6 alkyl; or R_3 is a group of formula



wherein each of R_8, R_9 and R_{10} independently represents hydrogen, halogen, trihalo-C_1–C_6-alkyl, C_3–C_4-alkenyloxy, or a $-(O)_p-R_{11}$ group, wherein p is zero or 1 and R_{11} represents a C_1–C_6 alkyl group, and the pharmaceutically acceptable salts thereof.

4. A pharmaceutical composition suitable for use as an anti-allergic agent, said composition comprising a therapeutically effective amount of a compound as claimed in claim 1, in association with a pharmaceutically acceptable carrier or diluent.

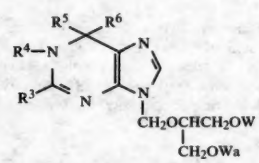
4,609,661

SUBSTITUTED 9-(1-O- OR 3-O-MONOSUBSTITUTED OR 1,3-DI-O-SUBSTITUTED PROPOXYMETHYL)PURINES AS ANTIVIRAL AGENTS

Julien P. H. Verheyden, Los Altos, and John C. Martin, Redwood City, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 406,583, Aug. 9, 1982, Pat. No. 4,556,659.
This application Jun. 13, 1985, Ser. No. 744,585
Int. Cl.[4] C07D *473/02;* A61K *31/52*
U.S. Cl. 514—262 4 Claims

1. A compound of the formula



(I)

wherein W is hydrogen or 1-carbonylimidazole, Wa is 1-carbonylimidazole or wherein W is hydrogen or 1-thiocarbonylimidazole and Wa is 1-thiocarbonylimidazole R^3 is hydrogen, halo, thio, lower alkylthio of one to six carbon atoms, azido, NR^9R^{10} wherein R^9 and R^{10} are independently hydrogen or lower alkyl of one to six carbon atoms or —NHC(O)Rhu 8 wherein R^8 is hydrogen, alkyl of one to nineteen carbon atoms or 1-adamantyl; and

(a) R^6 is hydrogen, halo, lower alkoxy of one to six carbon atoms, azido, thio, lower alkylthio of one to six carbon atoms, —NR^9R^{10} wherein R^9 and R^{10} are as defined above or —$NHC(O)R^8$ wherein R^8 is as defined above and R^4 together with R^5 is a bond; or

(b) R^5 together with R^6 is a keto group and R^4 is hydrogen.

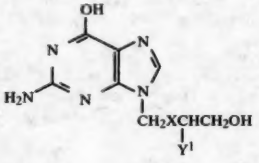
4,609,662

METHOD FOR USING PURINE DERIVATIVES

Thomas A. Krenitsky, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

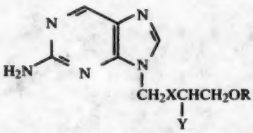
Filed Oct. 14, 1982, Ser. No. 434,395
Int. Cl.[4] C07D *473/18*; A61K *31/52*
U.S. Cl. 514—262 12 Claims

1. A method of generating a compound of formula (IA)



(IA)

wherein X is oxygen or sulphur and Y' is hydrogen within the body of a mammal by internally administering to said mammal a compound of formula (I)



(I)

wherein X is oxygen or sulphur, Y is hydrogen, and the R group is

wherein R° is hydrogen, alkyl of 1 to 6 carbons, or a physiologically acceptable acid addition salt thereof.

4,609,663

ALDOSE REDUCTASE INHIBITORS USEFUL IN GLAUCOMA THERAPY

Billie M. York, Jr., Fort Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Sep. 11, 1984, Ser. No. 649,288
Int. Cl.[4] A61K *31/44, 31/42, 31/40, 31/415*
U.S. Cl. 514—278 8 Claims

1. A method of treating the eye of a patient to retard or delay the progressive field of vision loss associated with primary open angle glaucoma which comprises the topical, oral or systemic administration of a therapeutically effective amount of a pharmaceutical composition containing an aldose reductase inhibitor.

4. A method according to claim 1, wherein the aldose reductase inhibitor is selected from the group consisting of:

a. Spiro-(7-fluoro-4H-indeno[1,2-b]thiophen-4,4'imidazolidine)-2',5'-dione;
b. Spiro-(2-fluoro-9H-fluoren-9,4'1-imidazolidine)-2',5'-dione;
c. Spiro-(2-fluoro-9H-fluoren-9,3'-succinimide);
d. Spiro-(7-fluoro-5H-indeno[1,2-b]-pyridin-5,4'-imidazolidine)-2',5'-dione;
e. Spiro-(7-chloro-5H-indeno[1,2-b]-pyridin-5,4'-imidazolidine)-2',5'-dione;
f. Spiro-(7-chloro-9H-pyrrolo[1,2-a]indol-9,4'-imidazolidine)-2',5'-dione;
g. Spiro-(2,7-difluoro-9H-fluoren-9,4'-imidazolidine)-2',5'-dione;
h. Spiro-(2,7-difluoro-9H-fluoren-9,3'-succinimide);
i. Spiro-(2,7-difluoro-9H-fluoren-9,5'-oxazolidine)-2',4'-dione;
j. Spiro-(7-fluoro-5H-indeno[1,2-B]pyridine-5,3'-succinimide);
k. Spiro-(7-chloro-5H-indeno[1,2-B]pyridine-5,3'-succinimide); and
l. Spiro-(7-methylthio-5H-indeno[1,2-b]pyridin-5,3'-succinimide).

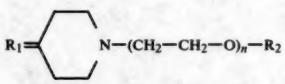
4,609,664

ANTIASTHMATIC PIPERIDYLIDENE DERIVATIVES

Klaus Hasspacher, Riehen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

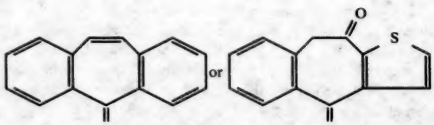
Continuation of Ser. No. 499,371, May 31, 1983, abandoned, which is a continuation of Ser. No. 296,912, Aug. 27, 1981, abandoned. This application Jul. 16, 1984, Ser. No. 631,221
Claims priority, application Switzerland, Sep. 2, 1980, 6606/80
Int. Cl.[4] A61K *31/445*; C07D *409/08*
U.S. Cl. 514—324 11 Claims

1. A compound of formula I



I

wherein n is 3,
R_1 is



Zb Zc

and R_2 is hydrogen or a physiologically acceptable and-hydroloysable acid residue, in free base or in pharmaceutically acceptable acid addition salt form.

8. A pharmaceutical composition useful in the treatment or prophylaxis of asthma, allergic conditions, and allergic asthma comprising a compound according to claim 1 in free base or pharmaceutically acceptable acid addition salt form, in an amount effective for the treatment of asthma, allergic conditions, and allergic asthma together with a pharmaceutically acceptable diluent or carrier therefor.

4,609,665

USE OF SELECTED PYRIDINE-N-OXIDE DISULFIDE COMPOUNDS TO TREAT OR PREVENT SWINE EXUDATIVE EPIDERMITIS

Jeffrey Davidson, Tulare, Calif.; John G. Babish, Ithaca, N.Y., and John H. Wedig, Guilford, Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Aug. 8, 1984, Ser. No. 638,924
The portion of the term of this patent subsequent to Aug. 16, 2000, has been disclaimed.
Int. Cl.[4] A61K *31/44*
U.S. Cl. 514—335 5 Claims

1. A method of treating an animal for swine exudative epidermitis which comprises administering to said animal an effective amount of at least one pyridine-N-oxide disulfide compound to treat or prevent swine exudative epidermitis; said pyridine-N-oxide disulfide compound selected from (a) 2,2'-dithiobis-pyridine-1,1'-dioxide and (b) adducts of 2,2'-dithiobis-pyridine-1,1'-dioxide, the adducts having the formula

$(C_5H_4NOS)_2MY_t$

wherein M is an alkaline earth metal selected from the group consisting of calcium, magnesium, barium and strontium, Y is an anion selected from the group consisting of halides, sulfates, nitrates, chlorates and acetates, and t is either 1 or 2.

4,609,666

AROMATASE INHIBITING DERIVATIVES OF α,α-BIS(4-HALOPHENYL)METHYLTETRAZOLES AND TRIAZOLES

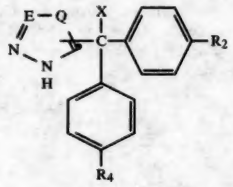
Kenneth S. Hirsch, New Palestine; Charles D. Jones, and Harold M. Taylor, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 18, 1984, Ser. No. 621,598

Int. Cl.[4] A61K *31/41;* **C07D** *249/04, 249/08, 257/04*

U.S. Cl. 514—359 **5 Claims**

1. A compound of the formula

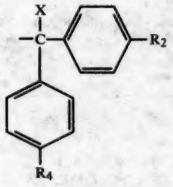


wherein

R_2 and R_4 are independently halo;

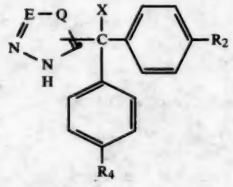
X is hydrogen; and

E and Q are independently N or CH, provided that one of E and Q is N and that the



group is attached to one of the carbon atoms of the azole ring, or a pharmaceutically acceptable salt thereof.

3. A method of inhibiting aromatase in a mammal which comprises administrating to said mammal an aromatase inhibiting amount of a compound of the formula

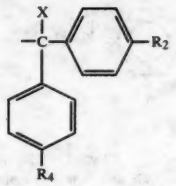


wherein

R_2 and R_4 are independently halo;

X is hydrogen, hydroxy, methyl, or halo; and

E and Q are independently N or CH, provided that one of E and Q is N and that the



group is attached to one of the carbon atoms of the azole ring, or a

pharmaceutically acceptable salt thereof.

4,609,667

INHIBITOR OF MAMMALIAN COLLAGENASE AND ELASTASE

Donald E. Clark, Norristown, and Norman H. Grant, Wynnewood, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

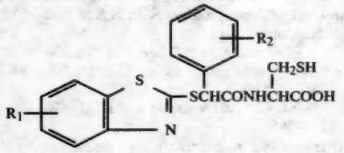
Continuation of Ser. No. 562,807, Dec. 19, 1983, abandoned, which is a continuation-in-part of Ser. No. 505,517, Jun. 17, 1983, abandoned. This application Mar. 21, 1985, Ser. No. 714,309

The portion of the term of this patent subsequent to Jan. 28, 2003, has been disclaimed.

Int. Cl.[4] A61K *31/425*

U.S. Cl. 514—367 **2 Claims**

1. A method of inhibiting mammalian elastase and collagenase in mammals afflicted with a disease state in which collagen-or elastin-containing tissue is broken down by elastase and/or collagenase, which comprises administering to such an afflicted mammal an amount sufficient to inhibit said elastase- and/or collagenase-induced collagen breakdown of an elastase and collagenase inhibitor having the formula



wherein R_1 is hydrogen, halo, nitro, amino, lower alkyl, lower alkoxy, trifluoromethyl or hydroxy; R_2 is fluorine, chlorine, bromine, lower alkyl, lower alkoxy, amino, nitro or trifluoromethyl; and the pharmacologically acceptable salts thereof.

4,609,668

FUNGICIDAL α-(ALKYNYLPHENYL)AZOLE ETHANOL COMPOUNDS

Fritz Schaub, Aesch, and Rupert Schneider, Riehen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

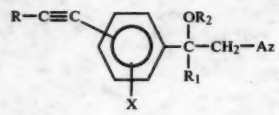
Filed Aug. 24, 1984, Ser. No. 644,401

Claims priority, application United Kingdom, Sep. 1, 1983, 8323412; Apr. 4, 1984, 8408655

Int. Cl.[4] A01N *43/50, 43/653;* **C07D** *233/60, 249/08*

U.S. Cl. 514—383 **29 Claims**

1. A compound of formula (I)



(I)

wherein

R is H, halogen; C_{1-5} alkyl; C_{2-5}alkenyl; C_{3-7}cycloalkyl; phenyl or phenylC_{1-3}alkylene, optionally substituted in the phenyl ring by halogen, C_{1-5}alkyl, C_{1-5}alkoxy, CF_3, OCF_3, NO_2 or phenyl;

R_1 is C_{1-8}alkyl, C_{2-8}alkenyl or C_{2-8}alkynyl optionally substituted by halogen; C_{3-6}cycloalkyl; C_{3-6}cycloalkyl-C_{1-3}alkylene optionally substituted by C_{1-3}alkyl or C_{3-6}cycloalkyl; phenyl or phenyl C_{1-3}alkylene optionally substituted in the phenyl ring by halogen, C_{1-5}alkyl, C_{1-5}alkoxy, CF_3, OCF_3, NO_2 or phenyl;

R_2 is H or C_{1-5}alkyl;

Az is 1,2,4-triazol-1-yl or imidazol-1-yl; and

X is H, C_{1-5}alkyl, C_{1-5} alkoxy, halogen, CF_3, OCF_3, NO_2 or phenyl;

either in free form or in the form of acid addition salt, alcoholate or metal complex.

13. A fungicidal composition comprising as active ingredient a fungicidally effective amount of a compound of claim **1**, in free form or in the form of agriculturally acceptable acid addition salt, alcoholate or metal complex in admixture with an agriculturally acceptable diluent.

4,609,669

CARBAMOYLIMIDAZOLE DERIVATIVES AND FUNGICIDAL USE THEREOF

Toyohiko Kume, Hino; Yoshio Kurahashi, Hachioji; Kunihiro Isono; Shinji Sakawa, both of Hino, and Noboru Matsumoto, Hachioji, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

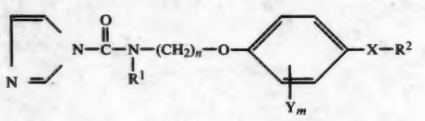
Filed Sep. 9, 1985, Ser. No. 774,206

Claims priority, application Japan, Sep. 11, 1984, 59-188778; Feb. 25, 1985, 60-34642

Int. Cl.[4] **A01N** *43/50;* **C07D** *233/54*

U.S. Cl. 514—399 **8 Claims**

1. Carbamoylimidazole derivatives represented by the general formula (I)



(I)

in which

R^1 represents lower alkyl, lower alkoxy—lower alkyl or cycloalkyl having 3 to 8 carbon atoms,

R^2 represents fluoro-substituted lower alkyl,

X represents oxygen or sulfur,

Y represents halogen or lower alkyl,

m represents the numbers 0, 1 or 2, and

n represents the numbers 2, 3, 4, 5 or 6.

7. A method of combating fungi which comprises applying to such fungi or to a fungus habitat a fungicidally effective amount of a compound according to claim **1**.

4,609,670

IMIDAZOLIUM HYPOGLYCEMIC AGENTS

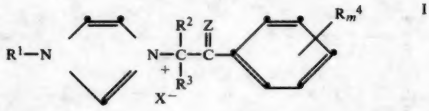
Samuel J. Dominianni, and Terence T. Yen, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 13, 1984, Ser. No. 670,776

Int. Cl.[4] **A61K** *31/415*

U.S. Cl. 514—399 **18 Claims**

1. A method for lowering blood glucose levels in mammals comprising administering an effective amount of a compound of the formula



I

wherein:

R^1 is C_1–C_4 alkyl;

R^2 and R^3 independently are hydrogen or C_1–C_4 alkyl;

each R^4 independently is $—OR^5$, $—NR^GR^7$, C_1–C_4 alkyl, C_1–C_4 alkoxy or C_1–C_4 alkylthio;

R^5 is hydrogen or

R^6 is hydrogen, C_1–C_4 alkyl or

R^7 is hydrogen or C_1–C_4 alkyl;

each R^8 independently is C_1–C_4 alkyl or phenyl;

Z is oxygen or sulfur;

X is a therapeutically acceptable anion; and

m is 0, 1 or 2.

4,609,671

5,6-EPOXY-7-OXABICYCLOHEPTANE SUBSTITUTED AMINO PROSTAGLANDIN ANALOGS USEFUL IN THE TREATMENT OF THROMBOTIC DISEASE

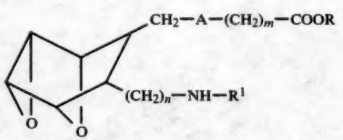
Jagabandhu Das, Plainsboro, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 27, 1985, Ser. No. 749,232

Int. Cl.[4] **A61K** *31/335, 31/557;* **C07D** *307/00*

U.S. Cl. 514—468 **12 Claims**

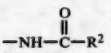
1. A compound having the formula



and including all stereoisomers thereof;

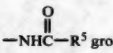
wherein A is CH=CH or $(CH_2)_2$;

m is 1 to 8; n is 0 to 5; R is H, lower alkyl, alkali metal or polyhydroxylamine salt; and R^1 is lower alkyl, aryl, aryl-lower alkyl, cycloalkyl, cycloalkylalkyl, lower alkenyl containing 2 to 12 carbons, lower alkoxy, aryl-lower alkoxy or



wherein R^2 is loweralkyl, lower alkoxy, aryl, aryl-lower alkyl, aryloxy, aryl-lower alkoxy, lower alkylamino, arylamino or aryl-lower alkylamino wherein lower alkyl or alkyl alone or as part of another group contains 1 to 12 carbons and is unsubstituted or is substituted with halo, CF_3, alkoxy, aryl, alkyl-aryl, haloaryl, cycloalkyl, alkyl-cycloalkyl, hydroxy, alkylamino or alkylthio;

aryl alone or as part of another group is phenyl or naphthyl optionally substituted with 1 or 2 lower alkyl groups, 1 or 2 halogens, 1 or 2 hydroxy groups, 1 or 2 lower alkoxy groups, 1 or 2 alkylthio groups or 1 or 2 alkylamino groups and wherein phenyl may also be independently substituted with a thiol, amino or



wherein R^5 is H or lower alkyl;

cycloalkyl alone or as part of another group contains 3 to 12 carbons and is unsubstituted or is substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups and/or 1 or 2 lower alkoxy groups, an aryl group, 1 or 2 hydroxyl groups, 1 or 2 alkylamino groups, or 1 or 2 alkylthio groups; and

$(CH_2)_m$ and $(CH_2)_n$ include straight or branched chain radicals having from 1 to 8 carbons in the normal chain in the case of $(CH_2)_m$ and having 1 to 5 carbons in the normal chain in the case of $(CH_2)_n$ and may contain 1 or 2 lower alkyl substitutents.

8. A method of inhibiting arachidonic acid-induced platelet aggregation and bronchoconstriction, which comprises administering to the circulatory system of a mammalian host an effective amount of a compound as defined in claim **1** or a pharmaceutically acceptable salt thereof.

4,609,672

1-(ALKANOYLAMINO-ARYLOXY)-2-HYDROXY-3-(ALKINYL-AMINO)-PROPANES AND SALTS THEREOF

Herbert Köppe; Werner Kummer; Helmut Stähle; Gojko Muacevic, all of Ingelheim am Rhein, and Werner Traunecker, Münster-Sarmsheim, all of Fed. Rep. of Germany, assignors to C. H. Boehringer Sohn, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 241,471, Mar. 9, 1981, abandoned. This application Jun. 25, 1984, Ser. No. 623,960

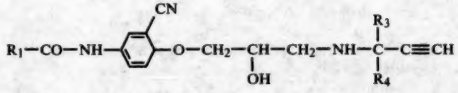
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1980, 3009047

The portion of the term of this patent subsequent to Aug. 17, 1999, has been disclaimed.

Int. Cl.[4] **A61K** *31/275*

U.S. Cl. 514—522 **26 Claims**

1. A compound of the formula



wherein

R_1 is a linear or branched alkyl of 4 to 20 carbon atoms;

R_3 is hydrogen or alkyl of 1 to 3 carbon atoms; and

R_4 is alkyl of 1 to 3 carbon atoms, or R_3 and R_4, together with each other, are $-(CH_2)_p-$, where p is an integer from 4 to 6, inclusive,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

11. A β-adrenolytic pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective β-adrenolytic amount of a compound of claim **1**.

4,609,673

CARBOXYLIC ACID DERIVATIVES, PROCESSES FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Hermann Eggerer, Planegg; Bernd Hagenbruch, Lampertheim; Tran G. Nguyen, Mannheim; Karlheinz Stegmeier, Heppenheim, and Johannes Pill, Leimen, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

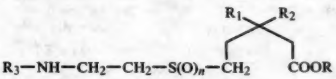
Filed Dec. 18, 1984, Ser. No. 682,935

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1984, 3400514

Int. Cl.[4] **C07C** *149/20, 147/05;* **A61K** *31/22*

U.S. Cl. 514—542 **20 Claims**

1. A carboxylic acid derivative of the formula



(I)

wherein

R is hydrogen, C_1–C_4 alkyl, a metal cation, or an ammonium or C_1–C_4 alkylammonium ion,

R_1 is hydrogen, hydroxyl, C_1–C_4 alkyl, C_1C_4 O-alkyl, O-benzyl or O-acyl which is an acid residue of an aliphatic or araliphatic carboxylic acid,

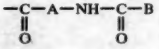
R_2 is hydrogen, C_1–C_4 alkyl, phenyl, phenyl substituted by halogen or methoxy, benzyl or phenethyl,

n is 0, 1 or 2, and

R_3 is an acyl which is

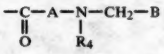
(a) a straight-chained or branched, saturated or unsaturated alkanoyl containing 2 to 11 carbon atoms; or

(b)



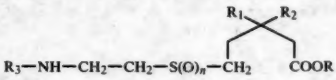
in which A is a straight-chained or branched, saturated or unsaturated aliphatic hydrocarbon containing up to 4 carbon atoms, which is optionally substituted by hydroxyl, and B is a straight-chained or branched, saturated or unsaturated aliphatic hydrocarbon containing up to 8 carbon atoms, which is optionally substituted one or more times by hydroxyl, carboxyl or phenyl, or B is phenyl or C_3–C_7 cycloalkyl; or

(c)



in which A and B have the same meanings as in (b) and R_4 is hydrogen, or C_1–C_4 alkyl, benzyl or phenethyl; or a pharmacologically acceptable salt thereof.

15. A method for reducing blood lipids in a patient comprising administering a blood lipid depressing effective amount of a carboxylic acid derivative of the formula:



(I)

wherein

R is hydrogen, C_1–C_4 alkyl, a metal cation, or an ammonium or C_1–C_4 alkylammonium ion,

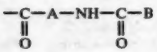
R_1 is hydrogen, hydroxyl, C_1–C_4 alkyl, C_1–C_4 O-alkyl, O-benzyl or O-acyl which is an acid residue of an aliphatic or araliphatic carboxylic acid,

R_2 is hydrogen, C_1–C_4 alkyl, phenyl, phenyl substituted by halogen or methoxy, benzyl or phenethyl,

n is 0, 1 or 2, and

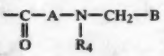
R_3 is an acyl which is

(a) a straight-chained or branched, saturated or unsaturated alkanoyl containing 2 to 11 carbon atoms; or



in which A is a straight-chained or branched, saturated or unsaturated aliphatic hydrocarbon containing up to 4 carbon atoms, which is optionally substituted by hydroxyl, and B is a straight-chained or branched, saturated or unsaturated aliphatic hydrocarbon containing up to 8 carbon atoms, which is optionally substituted one or more times by hydroxyl, carboxyl or phenyl, or B is phenyl or C_3–C_7 cycloalkyl; or

(c)



in which A and B have the same meanings as in (b) and R_4 is hydrogen, or C_1–C_4 alkyl, benzyl or phenethyl; or pharmacologically acceptable salt thereof.

4,609,674

STABILIZED CLEAR BENZOYL PEROXIDE COMPOSITIONS

Anil J. Gupte, Seymour, Conn., assignor to Richardson-Vicks Inc., Wilton, Conn.

Filed Jun. 11, 1984, Ser. No. 619,386
Int. Cl.[4] A61K *31/075, 31/225*
U.S. Cl. 514—547 **12 Claims**

1. A clear stable anhydrous benzoyl peroxide anti-acne composition comprising from about 0.1 to about 3.8% w/w anhydrous benzoyl peroxide in a C_6 to C_{10} triglyceride.

4,609,675

STABLE, HIGH DOSE, HIGH BULK DENSITY IBUPROFEN GRANULATIONS FOR TABLET AND CAPSULE MANUFACTURING

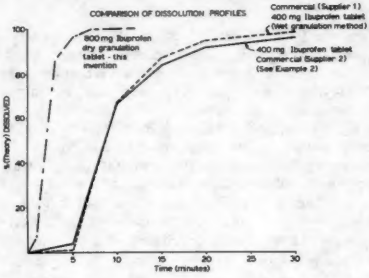
Robert M. Franz, Otsego Township, Allegan County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 641,917, Aug. 17, 1984, abandoned. This application Oct. 16, 1984, Ser. No. 661,538
Int. Cl.[4] A61K *9/16, 9/34*
U.S. Cl. 514—568 **9 Claims**

1. A phamaceutical, high drug content ibuprofen dry granulation formulation composition comprising

(a) about 85 to 99 percent, W/W of ibuprofen

(b) about 1 to 15 percent of croscarmellose sodium NF, types A and/or B,



the percentages of each ingredient (a) and (b) being based upon the weight of the total granulate formulation.

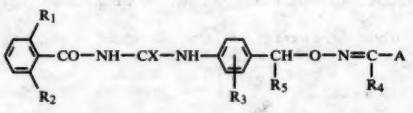
4,609,676

BENZOYLUREA COMPOUNDS, AND PESTICIDAL AND PHARMACEUTICAL COMPOSITIONS COMPRISING SAME

Marius S. Brouwer, and Arnoldus C. Grosscurt, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Division of Ser. No. 572,145, Jan. 19, 1984, Pat. No. 4,550,202. This application Jul. 26, 1985, Ser. No. 759,321
Claims priority, application Netherlands, Jan. 24, 1983, 8300236
Int. Cl.[4] A01N *43/40, 47/28*
U.S. Cl. 514—594 **4 Claims**

1. A composition having insecticidal and acaricidal activity, comprises a liquid or solid inert carrier material and a insecticidally and acaricidally effective amount of an active constituent of the following formula I:



(I)

wherein R_1 is a halogen atom,

R_2 is a hydrogen atom or a halogen atom,

R_3 is a hydrogen atom or represents 1 or 2 substituents which are selected from the group consisting of chlorine, methyl and trifluoromethyl,

R_4 is a hydrogen atom, an alkyl group having 1–6 carbons atoms or a cycloalkyl group having 3–6 carbon atoms,

R_5 is a hydrogen atom or an alkyl group having 1–4 carbon atoms,

A is a phenyl group or a heteroaryl group having 1 or 2 nitrogen atoms, which groups may be substituted with 1–3 substituents which are selected from the group consisting of halogen, and alkyl, alkoxy, haloalkyl and haloalkoxy having 1–4 carbon atoms, and

X is an oxygen or sulphur atom.

4,609,677

NON-STEROIDAL ANTI-INFLAMMATORY COMPOUNDS AND COMPOSITIONS THEREOF

Martin M. Rieger, Morris Plains, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 738,920, May 29, 1985. This application Nov. 7, 1985, Ser. No. 796,033

Int. Cl.[4] A61K *31/12, 31/015*

U.S. Cl. 514—679 5 Claims

1. An anti-inflammatory composition comprising a therapeutically effective amount of an agent selected from the group consisting of 1-phenyl-1-cyclohexene, 4-phenyl-cyclohexanone and mixtures thereof in combination with a topically compatible, pharmaceutically acceptable carrier.

4,609,678

PREPARATION OF ALCOHOLS FROM SYNTHESIS GAS

Harley F. Hardman, Lyndhurst, and Ronald I. Beach, Chagrin Falls, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 639,512, Aug. 7, 1984, Pat. No. 4,540,713, which is a continuation of Ser. No. 503,076, Jun. 13, 1983, abandoned, which is a continuation of Ser. No. 393,829, Jun. 30, 1982, abandoned, which is a continuation of Ser. No. 54,216, Jul. 2, 1979, abandoned, which is a continuation of Ser. No. 905,703, May 15, 1978, abandoned. This application Jun. 13, 1985, Ser. No. 744,401

Int. Cl.[4] C07C *27/06*

U.S. Cl. 518—713 16 Claims

1. A process for producing an alcohol mixture comprising contacting a gaseous reactant containing carbon monoxide and hydrogen at a temperature in the range of 250° C. to 350° C. and a pressure of no more than 1500 psi with an oxide complex catalyst described by the following empirical formula:

$$Cu_aThM_bA_cO_x$$

wherein

M is one or more of Mo, Mn, Ce, Cr, Zn, Ti and V;

A is an alkali metal; and

wherein

a is 0.5 to 2.5;

b is 0.01 to 1.0;

c is 0.05 to 0.9; and

x is a number such that the valence requirements of the other elements for oxygen is satisfied.

4,609,679

PROCESS FOR PRODUCING METHANE FROM HYDROGEN AND CARBON MONOXIDE

Clayton D. Wood, Framingham, Mass., and Edward F. Gleason, Berkeley, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 31, 1985, Ser. No. 739,944

Int. Cl.[4] C07C *1/04*

U.S. Cl. 518—715 12 Claims

1. In a process for producing hydrocarbons by contacting carbon monoxide and hydrogen at reactive conditions, the improvement comprising increasing the yield of methane by contacting the carbon monoxide and hydrogen with a catalyst consisting essentially of:

(a) a catalytic metal component which is from about 0.1 to about 10 percent by weight, based on the weight of the catalyst, of ruthenium; and the balance being

(b) a support component which is at least one oxide of tantalum, niobium, vanadium or mixtures thereof,

the support preparation including calcination at a temperature such that essentially no crystalline metal oxide is detectable by X-ray diffraction prior to deposition of the catalytic metal thereon.

4,609,680

PROCESS FOR THE DEPOLYMERIZATION OF POLYESTER SCRAP

Akiharu Fujita, Atami; Minako Sato, Shizuoka, and Masashige Murakami, Mishima, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed May 20, 1985, Ser. No. 735,837

Claims priority, application Japan, May 25, 1984, 59-104482

Int. Cl.[4] C08J *11/24;* C08L *67/02*

U.S. Cl. 521—48 5 Claims

5. A process for obtaining reconstituted polyester from polyester scrap whose main component is ethylene terephthalate, comprising the steps of

(1) supplying both ethylene glycol and polyester scrap either in intermittent batches over a period of time, or continuously over a period of time to a reactor in the presence of molten bis-hydroxyethylterephthalic acid and/or its oligomer (both referred to as BHT) under the following conditions:

(a) the molten BHT has a glycol to acid component equivalent ratio of 1.3 to 2.0

(b) the ratio by weight of the acid component of the molten BHT to that of the polyester scrap is to be 1/4 to 2/1

(c) the ratio of polyester scrap to ethylene glycol is such as to have a glycol to acid component equivalent ratio between the limits of 1.3 to 2.0

(2) depolymerizing under agitation between the temperatures of 215° and 250° C., and

(3) removing part of the depolymerized product to a polymerizing reactor, the remainder being left in the depolymerizing reactor for a subsequent polyester scrap depolymerization process.

4,609,681

ANTI-LUMPING STYRENE POLYMER PARTICLES FOR MOLDING FOAMS

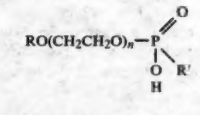
Alvin R. Ingram, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 791,478, Oct. 25, 1985. This application Jan. 13, 1986, Ser. No. 818,312

Int. Cl.[4] C08J *9/22*

U.S. Cl. 521—57 5 Claims

1. A composition comprising a styrene polymer containing dispersed throughout 3 to 20 weight percent of a blowing agent and coated on the surface thereof by 0.01 to 0.04 weight percent of a mixture of esters having general formula



wherein R may be alkaryl groups, branched alkyl groups having at least 7 carbon atoms, or normal alkyl groups having at least 10 carbon atoms; n may be a positive integer of from 1 to 33; and R′ may be $RO(CH_2CH_2O)_n$—or hydroxyl group.

4,609,682

PROCESS FOR THE PRODUCTION OF MOLDINGS

Christian Weber; Klaus König, both of Leverkusen, and Manfred Schmidt, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 19, 1985, Ser. No. 777,656

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1984, 3436163

Int. Cl.[4] C08G *18/14*

U.S. Cl. 521—117 2 Claims

1. A process for the production of an elastomeric molding having average density of from 0.8 to 1.4 g/cm^3 and of a sealed surface layer reacting a reaction mixture in a closed mold, said reaction mixture comprising:

(a) an organic polyisocyanate and
(b) a solution of
(1) a chain-lengthening agent, selected from the group consisting of (i) alkane diols having a molecular weight of from 62 to 400, which may contain ether groups, (ii) aromatic diamines having molecular weights of from 108 to 400 and (iii) mixtures of (i) and (ii), in
(2) a polyhydroxyl compound having an average molecular weight of from 1800 to 12,000 and an average hydroxyl functionality of from 2 to 3, provided that polyhydroxyl compounds having molecular weights of more than 400 and less than 1800 and/or hydroxyl functionalities of more than 3, can be used so long as the average molecular weight of the resultant mixture is from 1800 12,000 and the average hydroxyl functionality of the resultant mixture is from 2 to 3.
(c) catalyst for the isocyanate polyaddition reaction, and
(d) an internal mold release agent

characterized in that component (d) comprises an ester group-containing condensation product with an osmometrically-determinable average molecular weight of from 900 to 4500, an acid number of less than 5 and a hydroxyl number of from 12.5 to 125, which product is produced from 3 to 15 mols of ricinoleic acid and either one mol of a mono- or poly-valent alcohol having a molecular weight of from 32 to 400 or one mol of a mixture of several such alcohols, said release agent being used in a quantity of from 0.3 to 30% by weight based on the total quantity of the reaction mixture.

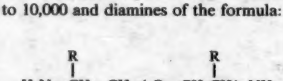
4,609,683

QUASI-PREPOLYMERS FROM ISATOIC ANHYDRIDE DERIVATIVES OF POLYOXYALKYLENE POLYAMINES AND RIM PRODUCTS MADE THEREFROM

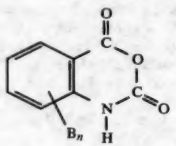
Robert A. Grigsby, Jr., Georgetown, and Richard J. G. Dominguez, Austin, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 21, 1985, Ser. No. 747,521
Int. Cl.[4] C08G 18/14
U.S. Cl. 521—159 7 Claims

1. A quasi-prepolymer prepared from the reaction between aromatic isocyanates and a compound comprising a reaction product of a polyoxyalkylene polyamine selected from the group consisting of triamines wherein the alkylene is ethylene, propylene or butylene, having an average molecular weight of about 400 to 10,000 and diamines of the formula:



wherein x is an integer of at least about 2.6 to 84 and R is hydrogen, methyl or ethyl, and an isatoic anhydride of the formula:



where B is selected from the group consisting of hydrogen, alkyl, nitro, halo, hydroxy, amino and cyano, and n is a number of 1–4.

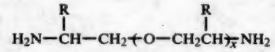
4,609,684

RIM PRODUCTS MADE FROM ISATOIC ANHYDRIDE DERIVATIVES OF POLYOXYALKYLENE POLYAMINES

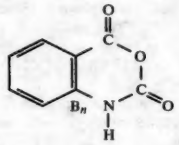
Robert A. Grigsby, Jr., Georgetown, and Richard J. G. Dominguez, Austin, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 21, 1985, Ser. No. 747,528
Int. Cl.[4] C08G 18/14
U.S. Cl. 521—163 6 Claims

1. A reaction injection molded elastomer made from an aromatic isocyanate and a compound comprising a reaction product of a polyoxyalkylene polyamine selected from the group consisting of triamines wherein the alkylene is ethylene, propylene or butylene, having an average molecular weight of about 400 to 10,000 and diamines of the formula:



wherein x is an integer of at least about 2.6 to 84 and R is hydrogen, methyl or ethyl, and an isatoic anhydride of the formula:



where B is selected from the group consisting of hydrogen, alkyl, nitro, halo, hydroxy, amino and cyano, and n is a number of 1–4.

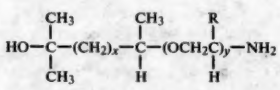
4,609,685

POLYETHER POLYOLS MODIFIED WITH AMINO ALCOHOL-EPOXY RESIN ADDUCTS

Michael Cuscurida, and Harold G. Waddill, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 6, 1985, Ser. No. 731,196
Int. Cl.[4] C08G 18/14
U.S. Cl. 521—167 20 Claims

1. A modified amino polyol for use in preparing flexible polyurethane foams, the modified polyol produced by reacting:
(1) an initiator having an active hydrogen functionality of from 3 to 4,
(2) one or more alkylene oxides,
(3) an amino alcohol adduct in such a manner that the adduct is added internally along the length of the polyol chain, the amino alcohol adduct being the reaction product of:
(a) an epoxy resin and
(b) an amino alcohol of the formula:



wherein:
x ranges from about 1 to 4,
y ranges from about 1 to 40, and
R is an alkyl radical of from 1 to 4 carbon atoms.

4,609,686

100 PERCENT SOLIDS EPOXY, NITRILE COATING COMPOSITIONS AND METHOD OF MAKING SAME

Paul Giordano, Jr., Hudson, and Richard C. Smierciak, Streetsboro, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Apr. 19, 1985, Ser. No. 725,283

Int. Cl.[4] C08G *59/20, 65/04, 65/26*

U.S. Cl. 522—31 24 Claims

1. A process for preparing an epoxy nitrile coating comprising:

(a) forming a mixture of an epoxy resin with an epoxy-nitrile monomer and a curing agent,

(b) applying the mixture to a substrate to form a coating, and

(c) effecting cure of the coating to form the epoxy nitrile coating composition.

4,609,687

MODIFIED FILLERS FOR SILICONE DENTAL PASTES

Peter Schwabe, and Reiner Voigt, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 14, 1985, Ser. No. 701,597

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1984, 3406233

Int. Cl.[4] A61K *6/10*

U.S. Cl. 523—109 8 Claims

1. In a composition cross-linkable to a shaped structure comprising

(a) a cross-linkable organopolysiloxane,

(b) hydrophobic filler particles,

(c) paraffin oil, and

(d) a colorant,

the improvement which comprises, as component (b), hydrophobic filler particles of which the surface has been laden with 0.5–5% by weight of paraffin oil.

4,609,688

TRANSPARENT, ANTI-FOGGING COATING COMPRISED OF PLASTIC MATERIAL CONTAINING A SURFACE ACTIVE AGENT

Helmer Rädisch, Aachen, and Werner Scholz, Pulheim, both of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, Courbevoie, France

Division of Ser. No. 632,465, Jul. 19, 1984, Pat. No. 4,551,484. This application Apr. 22, 1985, Ser. No. 725,679

Claims priority, application France, Jul. 22, 1983, 83 12139

Int. Cl.[4] C08L *75/04*

U.S. Cl. 523—169 8 Claims

1. A coating or film having anti-lacerative or self-healing properties comprising a transparent, highly elastic, heat-setting three dimensionally crosslinked polyurethane, and an effective amount of at least one surface active agent comprising one or more C_8–C_{16} polyethoxylated fatty alcohols disposed therein.

4,609,689

METHOD OF PREPARING FLUORESCENTLY LABELED MICROBEADS

Abraham Schwartz, Durham; Joel Williams, Cary, and Robert D. Stevens, Durham, all of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Division of Ser. No. 604,763, Apr. 27, 1984, abandoned. This application Jan. 28, 1985, Ser. No. 695,654

Int. Cl.[4] C08F *8/32, 20/32*

U.S. Cl. 523—202 13 Claims

1. A method for preparation of polymeric microbeads comprising:

(a) contacting a dispersion of swelled polymeric particles with an ethylenically unsaturated monomer containing an epoxy group, said monomer being absorbed into said particles;

(b) polymerizing said monomer to cause additional swelling of said particles, whereby said swelled particles provide a microbead with an epoxide group to serve as a first reactive functional group;

(c) reacting said epoxide with a polyfunctional spacing agent thereby to provide a second reactive functional group; and

(d) reacting said second reactive functional group with a suitable reagent which provides said microbead with a detectable label.

4,609,690

AQUEOUS HYDROXYL-ACRYLIC LATEX AND WATER DISPERSIBLE MULTI-ISOCYANATE ADHESIVE COMPOSITION

Norma J. Gruber, Worthington, and Clois E. Powell, Westerville, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 537,294, Sep. 29, 1983, Pat. No. 4,491,646. This application Dec. 28, 1984, Ser. No. 687,472

Int. Cl.[4] C08L *33/14;* C09J *3/14;* C08K *3/20;* C08J *5/12*

U.S. Cl. 523—334 24 Claims

12. A method for making an aqueous latex adhesive composition of an aqueous latex in admixture with a water dispersible multi-isocyanate cross-linking agent, and inorganic filler ingredients, the improvement for a room temperature-curable adhesive composition having improved water resistance comprises:

forming a filler grind of said filler ingredients ranging in particle size from between about 300 and 30,000 A; and

blending said grind with said latex, said cross-linking agent, and said filler ingredients the only active-hydrogen functionality in said adhesive composition comprising hydroxyl groups on said latex.

4,609,691

WATER-DISPERSIBLE BINDERS FOR CATIONIC ELECTRODEPOSITABLE PAINTS, AND METHOD FOR THEIR PRODUCTION

Michael Geist, Munster; Gunther Ott, Munster-Wolbeck, and Georg Schon, Everswinkel, all of Fed. Rep. of Germany, assignors to BASF Farben & Fasern AG, Hamburg, Fed. Rep. of Germany

Filed Aug. 31, 1984, Ser. No. 646,244

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1983, 3331903

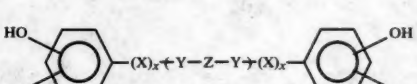
Int. Cl.[4] C08G *59/14;* C08L *63/00;* C25D *13/00;* C09D *5/44*

U.S. Cl. 523—415 17 Claims

1. A water-dispersible binder for a cationic electro-dip paint with a base of a modified epoxy resin, comprising

(A) a polyepoxy resin having a molecular weight of at least 350 which is reacted with

(B) an elasticized polyphenol having a molecular weight over 350 and having the general formula

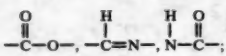


to produce an intermediate product wherein:

X is alkylene, arylene, alkarylene,
O, O-alkylene, O-arylene, O-alkarylene,
S, S-alkylene, S-arylene, S-alkarylene,
—CO—, CO-alkylene, CO-arylene, CO-alkarylene,
—SO_2—, SO_2-alkylene, SO_2-arylene, SO_2-alkarylene,
—NH—, NH_x-alkylene, NH-arylene or NH-alkarylene;

x is 0 or 1;

Y is X,



Z is alkylene, polyester, polyether, polyamide, polycarbonate, or polyurethane;

R is H, CH_3, alkyl, —O—CH_3, —O—alkyl, —NO_2, —NR'$_2$, —NR'R'', or —NHCOR'''; and provided that when X is O, S or NH then Y is other than O, O-alkylene, O-arylene, O-alkarylene, S, S-alkylene, S-arylene, S-alkarylene, NH, NH-alkylene, NH-arylene, NH-alkarylene or —NHCO—;

when X is CO or SO_2 then Y is other than CO, CO-alkylene, CO-arylene, CO-alkarylene, SO_2, SO_2-alkylene, SO_2-arylene, SO_2-arylene, SO_2-alkarylene or —CO_2—; and

further reaction of the intermediate product of (A) and (B) with

(C) a primary and/or secondary amine and/or ammonium salt to produce the binder having the required water-dispersibility.

4,609,692

LOW TEMPERATURE CURING MAINTENANCE COATINGS COMPRISING (A) EPOXY RESIN (B) POLYAMINE CURING AGENT (C) POLYMER CONTAINING PENDANT AMINOESTER GROUPS AND (D) ORGANIC SOLVENT

Jozef T. Huybrechts, Turnhout, and Ferdinand F. Meeus, Mechelen, both of Belgium, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

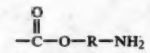
Filed Nov. 28, 1984, Ser. No. 675,555

Int. Cl.[4] C08K *3/36, 5/09;* **C08L** *63/00*

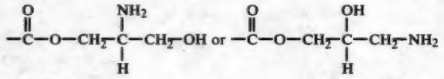
U.S. Cl. 523—439 **16 Claims**

1. A coating composition comprising 10–80% by weight of binder and 20–90% by weight of an organic solvent; wherein the binder consists essentially of about

(1) 20–60% by weight, based on the weight of the binder, of a polymer consisting essentially of polymerized monomers selected from the group consisting of styrene, methyl methacrylate, an alkyl methacrylate, an alkyl acrylate, each having 2–12 carbon atoms in the alkyl group, and said polymer having pending from the carbon atoms of the polymer backbone aminoester groups of the formula

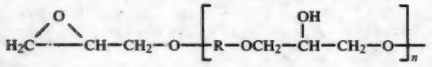


where R is an alkylene group having 2–3 carbon atoms or hydroxyamino ester groups of the formula



and the polymer having a number average molecular weight of about 1,500–100,000 determined by gel permeation chromatography using polystyrene as a standard;

(2) 15–45% by weight, based on the weight of the binder, of an epoxy resin selected from the group consisting of an epoxy resin of the formula



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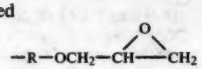
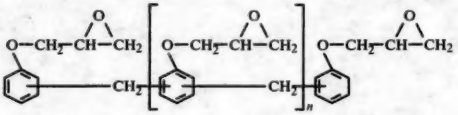
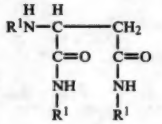


where R is an aromatic radical and n is a positive integer of about 0.5 to 4 or an epoxy novolac resin of the formula

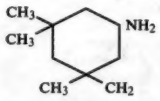


where n is a positive integer of about 0.2–2; and

(3) 5–25% by weight, based on the weight of the binder, of a polyamine curing agent of the formula



where R^1 is



4,609,693

LOW STYRENE EMISSION VINYL ESTER RESIN EMPLOYING DRYING OILS FOR FIBER-REINFORCED APPLICATIONS

John A. Schols, and KeeChung Yu, both of Sarnia, Canada, assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 3, 1985, Ser. No. 740,934

Int. Cl.[4] C08L *67/06, 67/08, 91/06, 91/00*

U.S. Cl. 523—465 **10 Claims**

1. An improved, low styrene emission, VER composition containing: (1) a VER which is an esterification product of a polyepoxide and a monounsaturated monocarboxylic acid; (2) styrene as a reactive diluent; (3) paraffin as a styrene emission inhibitor; and (4) wherein the improvement comprises including in such composition a drying oil, soluble at least in part both in the vinyl ester resin and in the paraffin wax, wherein said drying oil is present in an amount sufficient to increase the adhesion characteristic of the VER composition with a reinforcing material used therewith.

4,609,694

PROCESS FOR PREPARING METAMORPHOSED ALKALINE TITANATES

Takuo Morimoto, Kyoto; Kihachiro Nishiuchi, and Kenichi Wada, both of Tokushima, all of Japan, assignors to Otsuka Chemical Co., Ltd., Osaka, Japan

Filed Nov. 19, 1984, Ser. No. 672,791

Claims priority, application Japan, Nov. 21, 1983, 58-220352

Int. Cl.[4] C01G *23/00*

U.S. Cl. 423—598 **14 Claims**

1. A method of preparing electroconductive, heat resistant alkali metal titanates which comprises heating, under a non-oxidative, non-hydrogenous atmosphere, a mixture consisting essentially of at least one alkali metal compound capable of

being decomposed by heating into an oxide of the alkali metal and a gas, and titanium dioxide, in the presence of at least one carbide of an element selected from Group IV of the Periodic Table, said titanium dioxide and said alkali metal compound being present in the mixture in such proportions that the ratio of the number of titanium atoms to the number of alkali metal atoms is in the range of 1:1 to 1:10.

4,609,695

ASPHALT FOAM

Joseph A. Cogliano, Pasadena, Md., assignor to W. R. Grace & Co., Cambridge, Mass.

Division of Ser. No. 734,009, May 14, 1985, Pat. No. 4,567,095, which is a division of Ser. No. 646,779, Sep. 4, 1984, Pat. No. 4,524,156. This application Dec. 16, 1985, Ser. No. 809,554

Int. Cl.[4] C08L *95/00*

U.S. Cl. 524—59 **6 Claims**

1. A composition comprising gilsonite and a polyvalent metal salt of an anionic group containing polymer selected from polyvalent metal salt neutralized sulfonated polymers or polyvalent metal salt neutralized carboxylated polymers.

4,609,696

RUBBERIZED ASPHALT EMULSION

Elizabeth Wilkes, Glendale, Ariz., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed May 24, 1985, Ser. No. 738,106

Int. Cl.[4] C08L *95/00*

U.S. Cl. 524—59 **23 Claims**

1. A method of making a rubberized asphalt composition which comprises the steps of:

(a) combining asphalt with a hydrocarbon oil having a flash point of 300° F. or more to provide a homogenous asphalt-oil mixture or solution,

(b) then combining said asphalt-oil mixture with a particulate rubber at a temperature sufficient to provide a homogenous asphalt-rubber-oil gel, and

(c) emulsifying said asphalt-rubber-oil gel by passing said gel, water, and an emulsifying agent through a colloid mill to provide an emulsion.

4,609,697

HOT MELT ADHESIVE FOR BONDING ARTICLES MADE OF ETHYLENE-PROPYLENE TERPOLYMER

Günter Albers, Hamburg, Fed. Rep. of Germany, assignor to Phoenix Aktiengesellschaft, Hamburg-Harburg, Fed. Rep. of Germany

Filed Aug. 16, 1984, Ser. No. 641,332

Int. Cl.[4] C08L *95/00*

U.S. Cl. 524—68 **3 Claims**

1. A hot melt adhesive for bonding together two surfaces at least one of which is comprised of ethylene-propylene terpolymer, wherein the adhesive is comprised of the following components:

(a) 100 parts by weight styrene-ethylene-butylene-styrene block copolymer rubber;

(b) 10–150 parts by weight phr (per hundred parts of said rubber) aliphatic hydrocarbon resin;

(c) 50–300 parts by weight phr (per hundred parts of said rubber) aromatic hydrocarbon resin; and

(d) up to 1,000 parts by weight phr (per hundred parts of said rubber) bitumin having a softening point, according to the Ring and Ball method (DIN test 52011), of 37/44–54/59.

4,609,698

OLIGOESTERS CONTAINING POLYALKYLPIPERIDINE GROUPS

Friedrich Karrer, Zofingen, and Jean Rody, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

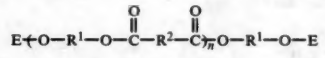
Continuation of Ser. No. 589,918, Mar. 15, 1984, abandoned. This application Apr. 26, 1985, Ser. No. 728,011

Claims priority, application Switzerland, Mar. 21, 1983, 1513/83

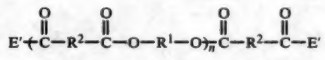
Int. Cl.[4] C08K *5/34*

U.S. Cl. 524—99 **8 Claims**

1. An oligomeric ester of the formula I or II



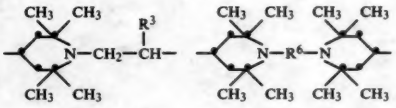
I

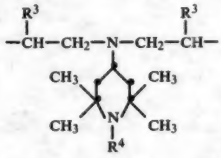


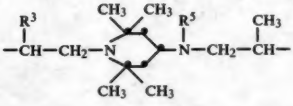
II

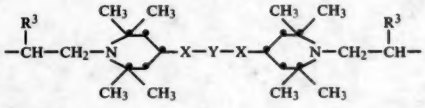
in which n has a value from 1 to 3,

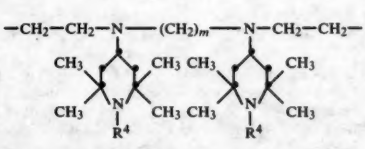
R^1 and R^2 are divalent organic radicals at least one of which contains a polyalkylpiperidine radical, R^1 is C_2–C_{18}-alkylene, C_4–C_8-alkenylene, C_4–C_{20}-monooxaalkylene, C_4–C_{20}-polyoxaalkylene, C_5–C_8-cycloalkylene, C_7–C_{10}-cycloalkane-dialkylene, C_8–C_{20}-arene-dialkylene or a divalent radical of the formulae











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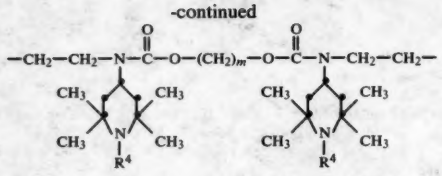
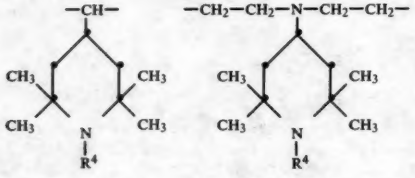
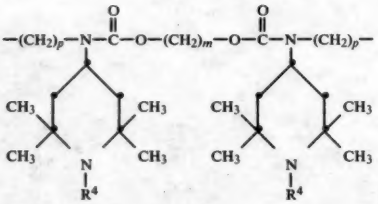


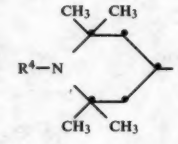
in which m is 2 to 10, X is a group —O— or —NR^5—, Y is C_2–C_{12}-alkylene, C_4–C_{12}-alkylene which is interrupted by one or two —O— or —NH— groups, cyclohexylene, cyclohexane dimethylene, C_6–C_{12}-arylene or -phenylene-Z-phenylene- in which Z is —O—, —CH_2—, or —SO_2—, R^2 is a direct bond, C_1–C_{18}-alkylene, C_2–C_6-alkenylene, C_5–C_8-cycloalkylene, C_5–C_8-cycloalkenylene, C_6–C_{12}-arylene, C_7–C_{12}-aralkylene or a divalent radical of the formulae



or

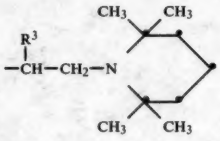


in which p is 1 or 2, E is hydrogen, C_1–C_8-alkyl, cyclohexyl, benzyl or an acyl group of the formula R^7—CO—, R^8—O—CO— or (R^9)(R^{10})N—CO— and E' is a group R^{11}O— or (R^{12})(R^{13})N— and wherein R^3 is hydrogen, C_1–C_6-alkyl, C_2–C_7-alkoxymethyl, phenoxymethyl or tolyloxymethyl, R^4 is hydrogen, C_1–C_8-alkyl, C_2–C_8-alkanoyl, C_3–C_6-alkenoyl, C_7–C_{12}-phenylalkyl or C_3–C_5-alkenylmethyl, R^5 is hydrogen, C_1–C_{12}-alkyl, cyclohexyl, phenyl, benzyl, phenylethyl, C_2–C_8-alkanoyl, C_3–C_6-alkenoyl or benzoyl, R^6 is C_2–C_{12}-alkylene, C_4–C_8-alkenylene or xylylene, R^7 is C_1–C_{12}-alkyl, C_2–C_5-alkenyl, C_5–C_8-cycloalkyl, C_6–C_{10}-aryl, C_7–C_{12}-phenylalkyl or a group of the formula



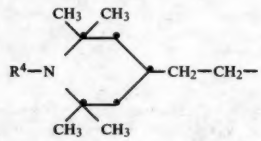
IV

R^8 is C_1–C_{12}-alkyl, allyl, cyclohexyl or phenyl, R^9 is hydrogen, C_1–C_8-alkyl, allyl, cyclohexyl, phenyl or C_7–C_{10}-alkylphenyl and R^{10} is C_1–C_8-alkyl, allyl, cyclohexyl, phenyl or C_7–C_{10}-alkylphenyl, or R^9 and R^{10}, together with the N atom to which they are attached, form a pyrrolidine, piperidine, morpholine, 4-methylpiperazine or 4-(2-cyanoethyl)piperazine ring, R^{11} is C_1–C_{12}-alkyl, C_3–C_5-alkenylmethyl, C_5–C_8-cycloalkyl, phenyl, C_7–C_{10}-alkylphenyl, C_7–C_{12}-phenylalkyl, C_3–C_{12}-alkoxyalkyl, a group —$(CH_2CH_2O)_m$—CH_3, a group of the formula IV or a group of the formula V



V

R^{12} is C_1–C_{12}-alkyl, allyl, cyclohexyl, phenyl, benzyl, C_3–C_{12}-alkoxyalkyl, C_4–C_{12}-dialkylaminoalkyl, a group of the formula IV or a group of the formula VI



VI

and R^{13} is hydrogen, C_1–C_{12}-alkyl, allyl, cyclohexyl or a group of the formula IV, and to co-oligomers thereof, said oligomeric ester being formed by the polycondensation of a dicarboxylic acid ester and a diol, one of which components being in a molar excess of 33 to 100% of the other.

4,609,699

POLYARYLENE SULPHIDES WITH REDUCED CORROSION

Rolf-Volker Meyer, Krefeld; Klaus Reinking, Wermelskirchen; Karsten-Josef Idel, and Rolf Dhein, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 22, 1984, Ser. No. 663,500

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1983, 3339581

Int. Cl.^{4} C08K *5/35, 5/34, 5/16, 5/04*

U.S. Cl. 524—100 **6 Claims**

1. Thermoplastically-processible moulding compositions of polyarylene sulphides containing from 0.1 to 5 parts, by weight, based on the content of polyarylene sulphide, of primary or secondary amines having at least two amino groups, a boiling point of at least 150° C., and having the formula:

wherein

X represents an n-function

aliphatic C_1–C_{30} hydrocarbon radical, in which at most every third chain member is an O-atom or an NH-group,

cycloaliphatic, C_5–C_{30} hydrocarbon radical,

araliphatic C_7–C_{30} hydrocarbon radical,

R represents H, C_1–C_{30} alkyl, C_7–C_{30} aralkyl or C_5–C_{30} cycloalkyl;

n represents an integer of from 1 to 6; and

X and R taken together form with the nitrogen a heterocyclic ring containing from 5 to 12 ring members.

4,609,700

SOLUBLE IMIDE OLIGOMER AND A METHOD FOR PRODUCING THE SAME

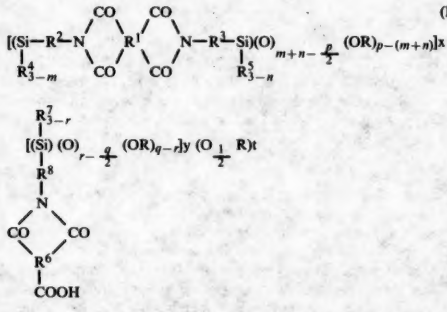
Kouichi Kunimune, Ichiharashi, and Shiro Konotsune, Yokosukashi, both of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jun. 19, 1985, Ser. No. 732,726
Int. Cl.[4] C08K 5/34
U.S. Cl. 524—104 25 Claims

1. A soluble imide oligomer having an inherent viscosity (n inh) of 0.05 to 0.5 dl/g as determined by the following equation:

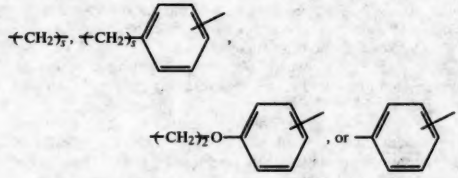
$$\eta \text{ inh} = \frac{\ln \eta/\eta_0}{C}$$

wherein η is a value as measured using an Ubbellohde viscometer at an oligomer concentration of 0.5 g/dl in N-methyl-2-pyrrolidone at a temperature of 30±0.01° C., η_0 is a value for N-methyl-2-pyrrolidone as measured using the same viscometer as described above at the same temperature as described above, and C represents said oligomer concentration of 0.5 g/dl; and represented by the following general formula (I):



(I)

wherein R^1 and R^6 are tetravalent and trivalent carbocyclic aromatic groups, respectively, carbonyl groups being bonded to said carbocyclic aromatic groups at the mutually different ring-forming carbon atoms thereof, every pair of imide ring-forming carbonyl groups being bonded to a carbocyclic ring of said carbocyclic aromatic groups in the mutual ortho positions thereof; R^2, R^3 and R^8, which are the same or different groups; are



wherein s is an integer of 1 to 4; R^4, R^5 and R^7, which are the same or different groups, are an alkyl group having 1 to 6 carbon atoms, a phenyl group, or an alkyl-substituted phenyl group having 7 to 12 carbon atoms; R is hydrogen or alkyl or acetyl group; m and n each are an integer of 1, 2 or 3, and satisfy an equation: $m+n \geqq 3$; r is 2 or 3; p and q are integers and satisfy the relation of $m+n \leqq p < 2(m+n)-1$ and $r \leqq q < 2r-1$; t is 0 or 2; and x and y are values satisfying the following equation:

$$0 \leqq \frac{100\,y}{x+y} \leqq 10.$$

4,609,701

THERMOPLASTIC PVC MOLDING COMPOSITIONS

Jesse D. Jones, and Edwin D. Hornbaker, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 209,843, Nov. 24, 1980, Pat. No. 4,510,280.
This application Feb. 4, 1985, Ser. No. 698,163
Int. Cl.[4] C08L 27/06, 25/08, 51/04
U.S. Cl. 524—178 8 Claims

1. A thermoplastic molding composition which comprises in intimate admixture:

(a) a vinyl chloride polymer having a relative viscosity as measured at a concentration of 1 gram per 100 grams of cyclohexanone at 25° C. falling within the range of about 1.50 to about 1.85;

(b) a copolymer of a vinyl aromatic compound and an α,β-unsaturated cyclic anhydride in which the relative proportions of said compound and said anhydride fall within the range of about 91 to about 70 weight percent of said compound and about 9 to about 30 weight percent of said anhydride; and

(c) a tin-containing stabilizer and an impact modifier of styrene-methyl methacrylate grafted on polybutadiene; with the proviso that said admixture contains 60 to 40 weight percent of (a) and 40 to 60 weight percent of (b), with the remainder being component (C), and the further proviso that the blend has the following properties:

(d) an Izod impact strength (ASTM D 256, Method A) of at least 0.5 foot pound per inch;

(e) a heat deflection temperature (ASTM D 648) at 66 psi of at least 75° C.; and

(f) a dynamic thermal stability of at least 10 minutes.

4,609,702

ETHER MODIFIED POLYESTERIMIDE RESINS

Otto S. Zamek, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Oct. 22, 1985, Ser. No. 790,284
Int. Cl.[4] C08G 73/16
U.S. Cl. 524—317 20 Claims

1. An ether modified polyesterimide resin composition prepared by reacting under esterimide forming conditions substantially free of inert solvents a mixture consisting essentially of:

(i) a diamine,

(ii) a carboxylic acid anhydride containing at least one additional carboxylic group or the corresponding acid thereof,

(iii) an aromatic bis (ether anhydride) or the corresponding acid thereof,

(iv) terephthalic acid and/or isophthalic acid, and

(v) a polyhydric alcohol having at least two hydroxyl groups.

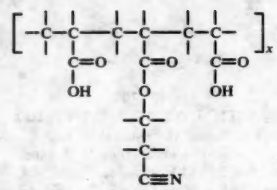
4,609,703

CYANOETHYLACRYLATE/ACRYLIC ACID COPOLYMER

Thomas G. Rukavina, Lower Burrell, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 615,191, May 30, 1984, Pat. No. 4,554,318.
This application Jun. 5, 1985, Ser. No. 741,501
Int. Cl.[4] C08L 33/02, 63/10
U.S. Cl. 524—360 12 Claims

1. A composition of matter comprising the polymerization reaction product of cyanoethylacrylate and acrylic acid having the structural formula



wherein x is ≧1.

4,609,704

VINYL ACETATE/ACRYLATE COPOLYMER EMULSIONS FOR PAPER COATING COMPOSITIONS

Mary L. Hausman, Barto; William E. Lenney, Allentown, and Gerald D. Miller, Macungie, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 623,676, Jun. 22, 1984, Pat. No. 4,503,185, and a continuation-in-part of Ser. No. 623,644, Jun. 22, 1984. This application Nov. 9, 1984, Ser. No. 670,259

Int. Cl.[4] C08F 2/24

U.S. Cl. 524—710 24 Claims

1. In a vinyl ester/alkyl acrylate copolymer emulsion comprising a copolymer colloidally dispersed in water, the copolymer consisting essentially of (a) a vinyl ester of a (C_1–C_{12}) alkanoic acid, (b) 2 to 50 wt % of a (C_1–C_8) alkyl acrylate, and (c) 0.1 to 10 wt % of an ethylenically unsaturated (C_3–C_{10}) mono- or dicarboxylic acid or the half ester of such dicarboxylic acid with a (C_1–C_{18}) alkanol, the copolymer being prepared by an aqueous emulsion polymerization process, the improvement for enhancing the wet pick strength of such vinyl ester/alkyl acrylate copolymer which comprises performing the aqueous emulsion polymerization in the presence of an emulsifyingly effective amount of a stabilizer system consisting essentially of at least one (C_8–C_9) alkyl phenoxy polyethoxy ethanol and an anionic surfactant which is an organic aromatic phosphate ester.

4,609,705

POLYIMIDE MOLDING COMPOSITIONS

James V. Crivello, Clifton Park, and Steven T. Rice, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 514,728, Jul. 18, 1983, abandoned. This application Feb. 21, 1985, Ser. No. 703,771

Int. Cl.[4] C08F 216/12, 216/14

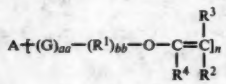
U.S. Cl. 524—779 15 Claims

13. A molding composition comprising:

(A) 0 to 60% of one or more fillers and

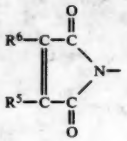
(B) 40 to 100% of a reactive composition comprising

(a) aromatic vinyl ether of the formula



and

(b) maleimide having at least one chemically combined of the formula



wherein R^6, R^2, R^3, R^4 and R^5 are selected from the group consisting of hydrogen, halogen and alkyl radicals of from 1 to 8 carbon atoms, R^1 is an alkylene radical of from 1 to 8 carbon atoms, G is selected from the group consisting of —O—,

and mixtures thereof, A is selected from a group consisting of monovalent and polyvalent aromatic radicals of from 6 to 130 carbon atoms, n is an integer equal to 1–10 inclusive and both aa and bb are integers having a value of 1 or 0, subject to the proviso that when bb is zero, aa is zero.

4,609,706

HIGH SOLIDS COATINGS USING UNSATURATED MONOISOCYANATE ADDUCTS OF ALKYD RESINS

Daniel Bode, Cleveland, and Henry J. DeGraaf, Stow, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Mar. 27, 1985, Ser. No. 716,699

Int. Cl.[4] C08L 67/08, 33/08

U.S. Cl. 525—7.4 10 Claims

1. An oxidatively curable coating composition comprising a film-forming drying oil modified alkyd or acrylic resin and from about 5 to about 40 weight percent basis said resin of a cure modifier which comprises the reaction product of

(a) an oligomer or polymer selected from the group consisting of acrylic, polyester, urethane, polyether, and polyepoxide, said oligomer or polymer having hydroxyl functional groups adapted to react with an ethylenically unsaturated isocyanate monomer as set forth in (b) to form appendages having both urethane linkages and ethylenical unsaturation; and

(b) a bifunctional reactive monomer containing both an ethylenically unsaturated moiety and one isocyanate functionality; said monomer selected from the group consisting of unsaturated aralkyl isocyanate, isocyanatoalkyl acrylate, and isocyanatoalkyl methacrylate;

wherein said product has chain appendages having both urethane and ethylenic unsaturation, has a number average molecular weight from about 400 to 1,600 and contains from about 0.2 to 6 ethylenically unsaturated groups per mole and less than 0.1% by weight free isocyanate groups.

7. A high solids oxidatively curable coating composition which comprises as the principal resin component at least 50 weight percent of the reaction product of

(a) a low molecular weight drying oil alkyd having hydroxyl functional groups adapted to react with an ethylenically unsaturated isocyanate monomer as set forth in (b) to form appendages having both urethane linkages and ethylenical unsaturation; and

(b) a bifunctional reactive monomer containing both an ethylenically unsaturated moiety and one isocyanate functionality; said monomer selected from the group consisting of unsaturated aralkyl isocyanate, isocyanatoalkyl acrylate and isocyanatoalkyl methacrylate;

wherein said product has a number average molecular weight of from about 400 to 1,600, and contains from about 0.2 to 6 ethylenically unsaturated groups per mole and less than 0.1% by weight free isocyanate groups.

4,609,707

SYNTHESIS OF POLYMERS CONTAINING INTEGRAL ANTIBODIES

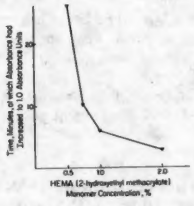
Robert C. Nowinski, and Allan S. Hoffman, both of King County, Wash., assignors to Genetic Systems Corporation, Seattle, Wash.

Continuation-in-part of Ser. No. 550,929, Nov. 10, 1983, Pat. No. 4,511,478, and a continuation-in-part of Ser. No. 600,838, Apr. 16, 1984, abandoned. This application Nov. 7, 1984, Ser. No. 668,248

The portion of the term of this patent subsequent to Apr. 16, 2002, has been disclaimed.

Int. Cl.[4] C08L *89/00;* C08H *1/00*

U.S. Cl. 525—54.1 26 Claims


Time, Minutes, at which Absorbance had Increased to 1.0 Absorbance Units
HEMA (2-hydroxyethyl methacrylate) Monomer Concentration, %

1. A method for the de novo synthesis of antibody-containing polymers, comprising:

forming a monomer/antibody conjugate with the antibody covalently bonded to the monomer, and

initiating polymerization of the monomer/antibody conjugate to form polymers integrally containing the antibody.

4,609,708

METHOD FOR MANUFACTURE OF POLYMERIC PYRROLIDINIUM METHANESULFONATE VISCOSIFIERS

Kirk D. Schmitt, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

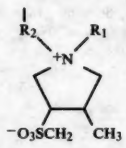
Division of Ser. No. 413,574, Aug. 31, 1982, Pat. No. 4,504,622, which is a continuation-in-part of Ser. No. 373,553, Apr. 30, 1982, Pat. No. 4,528,383. This application Jan. 28, 1985, Ser. No. 695,508

Int. Cl.[4] C08F *8/34*

U.S. Cl. 525—61 8 Claims

1. A method of preparing a polymeric sulfonate comprising a polymeric polyvinyl alcohol backbone having side chain groups of the formula:

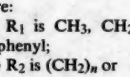
(I)



where:

(i) R_1 is CH_3, CH_2CH_3, CH_2CH_2OH, propyl, butyl or phenyl;

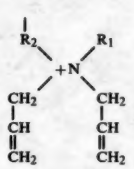
(ii) R_2 is $(CH_2)_n$ or



and

(iii) n is 1-5,

the method comprising reacting a polymeric polyvinyl alcohol backbone having side.chain groups of the formula



with a bisulfite salt.

4,609,709

MAT BINDERS

Ben J. Yau, Reynoldsburg, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 610,902, May 16, 1984, Pat. No. 4,560,612. This application Aug. 19, 1985, Ser. No. 767,381

Int. Cl.[4] D04H *1/58, 1/64;* C08L *9/08, 61/28*

U.S. Cl. 525—164 3 Claims

1. A binder composition consisting essentially of a urea-formaldehyde resin, a styrene-butadiene latex copolymer and a fully methylated melamine-formaldehyde copolymer.

4,609,710

UNDRAWN POLYESTER YARN AND PROCESS FOR MANUFACTURING

Kohichi Iohara, and Michikage Matsui, both of Ibaraki, Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 299,064, Sep. 3, 1981, abandoned. This application Dec. 19, 1983, Ser. No. 563,003

Claims priority, application Japan, Sep. 3, 1980, 55-121211

Int. Cl.[4] C08L *67/02*

U.S. Cl. 525—176 6 Claims

1. An undrawn polyester yarn prepared by a process which comprises:

melting a polyester containing 0.2 to 10% by weight of a finely divided and uniformly dispersed polymer consisting of units represented by the following formula (1):

wherein R_1 and R_2 is each a substituent consisting of atoms selected from the group consisting of C, H and O atoms, with the proviso that R_1 and R_2 are not phenyl or substituted phenyl and that the sum of the molecular weight of R_1 and R_2 is at least 40, and n is a positive integer;

spinning the melt from a spinneret, and taking up the spun yarn at a speed of between 1500 and 8000 n/min.

4,609,711

FLAME RETARDANT MOLDED COMPOSITION WHICH INCORPORATES A POLY(N-(BROMOPHENYL)MALEIMIDE-CO-STYRENE-CO-N-PHENYLMALEIMIDE) COPOLYMER

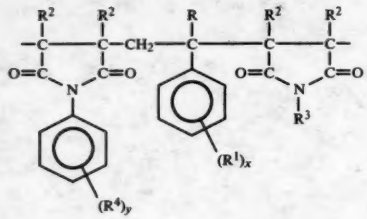
Usama E. Younes, Newtown Square, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 24, 1984, Ser. No. 685,355

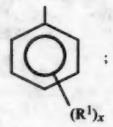
Int. Cl.[4] C08F *214/16;* C08L *39/04*

U.S. Cl. 525—186 5 Claims

1. A moldable composition comprising a random copolymer comprised of the following recurring units:



wherein R represents —H, —CH_3, or —CH_2CH_3; wherein each R^1 separately represents —CH_3, —CH_2CH_3, —$CH(CH_3)_2$, —$C(CH_3)_3$, —OH, —NH_2, —OCH_3, —CO_2H, —$CONH_2$, or —$CON(CH_3)_2$; each R^2 separately represents —H or —CH_3; R^3 represents a C_1 to C_4 alkyl group or



R^4 represents —Cl or —Br; x represents an integer of from 0 to 3; and, wherein y represents an integer of from 1 to 3 and a flame-retardant synergist.

4,609,712

METHOD FOR PREPARING MONOMERIC AND POLYMERIC BIS(DICARBOXYPHENYL) SULFONE COMPOUNDS

Thomas L. Evans, and Marsha M. Grade, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 18, 1984, Ser. No. 621,822
Int. Cl.[4] C08G *73/10*
U.S. Cl. 525—417 **16 Claims**

1. A method for preparing a bis(dicarboxyphenyl)sulfone compound which comprises oxidizing the corresponding sulfide compound with an oxidizing agent selected from the group consisting of acetyl peroxide and m-chloroperbenzoic acid, employed in excess at a temperature within the range of about 35°–150° C.

4,609,713

PHENOTHIAZINIUM PERHALIDE CROSSLINKING AGENT FOR POLYMER CONTAINING PLURALITY OF SECONDARY AMINE MOIETIES.

Willie C. Burton, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 26, 1985, Ser. No. 716,079
Int. Cl.[4] C08J *3/24*
U.S. Cl. 525—417 **6 Claims**

1. A process for crosslinking a polymer, said polymer containing a plurality of secondary amine moieties, which process comprises contacting the polymer with a phenothiazinium perhalide compound under conditions sufficient to provide crosslinking of the polymer through said amine moieties.

4,609,714

BLENDS OF POLY(ARYL KETONES)

James E. Harris, Piscataway, and Lloyd M. Robeson, Whitehouse Station, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 536,834, Sep. 24, 1983, abandoned. This application Sep. 14, 1984, Ser. No. 650,100
Int. Cl.[4] C08L *61/00, 71/00*
U.S. Cl. 525—471 **23 Claims**

1. A poly(aryl ether) resin blend comprising from about 5 to about 95 weight percent of at least two separately made crystalline poly(aryl ether) resins formed into an intimate moldable mixture, each resin having, prior to being formed into said mixture (i) a different crystalline melting temperature and a different glass transition temperature, or (ii) a different molecular arrangement of unit components each resin comprising 1,4-phenylene units separated by either oxygen and at least one of said resins containing 1,4-phenylene units separated by a divalent carbonyl radical; and poly(aryl ether) resins each having a reduced viscosity of at least about 0.4 to about 5.0 dl/g as determined in concentrated sulfuric acid at 25° C. using a concentration of 1.0 weight percent polymer solution.

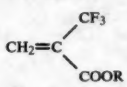
4,609,715

COPOLYMER OF FLUOROMETHACRYLATE WITH STYRENE OR ITS DERIVATIVE AND METHOD OF PREPARING SAME

Toshio Koishi, Sakado; Akira Ishihara, Tokorozawa; Takamasa Fuchigami, Sagamihara, all of Japan, and Iwao Ojima, East Setauket, N.Y., assignors to Central Glass Company, Limited, Ube, Japan

Filed May 17, 1985, Ser. No. 735,266
Claims priority, application Japan, May 24, 1984, 59-103657
Int. Cl.[4] C08F *212/08, 212/36, 214/18*
U.S. Cl. 526—245 **2 Claims**

1. A radically polymerized copolymer of a first monomer represented by the general formula (1)



(1)

wherein R represents CH_2CF_3 or $CH(CF_3)_2$, with a second monomer which is an aromatic vinylic compound selected from the group consisting of styrene, p-methylstyrene and divinyl benzene.

4,609,716

POLY(VINYLIMINOMETHYLENE) FROM VINYL ISOCYANIDE

Robert B. King, and Lester Borodinsky, both of Athens, Ga., assignors to The University of Georgia, Athens, Ga.

Filed Oct. 31, 1984, Ser. No. 666,902
Int. Cl.[4] C08F *26/02, 126/02*
U.S. Cl. 526—310 **6 Claims**

1. A poly(vinyliminomethylene) homopolymer having the formula:

$$[RR'C{=}C(R'')N{=}C<]_n$$

wherein R and R′, which are the same or different, are each hydrogen, a C_1–C_8 alkyl group or a C_3–C_7 cycloalkyl group which is unsubstituted or substituted by lower alkyl or alkoxy groups; a C_2–C_8 alkenyl group or a C_5–C_7 cycloalkenyl group which is unsubstituted or substituted by lower alkyl or alkoxy groups; a phenyl group or naphthyl group which is unsubstituted or substituted by lower alkyl or alkoxy groups; with the proviso that at least one of R or R′ is a substituent other than hydrogen, R″ is hydrogen, and n has a value such that the polymer weight-average molecular weight is in the range of

about 2,000 to 400,000 as determined by gel permeation chromatography.

4,609,717

HIGH SOLIDS COATING COMPOSITIONS BASED ON LONG CHAIN DIOLS

Barbara A. Greigger, Allison Park, and Rostyslaw Dowbenko, Gibsonia, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 3, 1985, Ser. No. 719,660
Int. Cl.[4] C08G *63/76, 65/48*
U.S. Cl. 528—45 **13 Claims**

1. A coating composition comprising:

(a) 10 to 90 percent by weight of the reaction product of an apliphatic diol having a hydrocarbon chain length between hydroxyls of greater than C_{10} and a reactant selected from the class consisting of lactones, epoxides and mixtures thereof;

(b) 10 to 70 percent by weight of a crosslinking agent capable of reacting with the active hydrogens in the aliphatic diol to give a thermoset composition upon curing.

4,609,718

ULTRAVIOLET CURABLE BUFFER COATINGS FOR OPTICAL GLASS FIBER BASED ON LONG CHAIN OXYALKYLENE DIAMINES

Timothy E. Bishop, Algonquin; Clive J. Coady, Hanover Park, and John M. Zimmerman, Schaumburg, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed May 8, 1985, Ser. No. 731,887
Int. Cl.[4] C08G *18/30*
U.S. Cl. 528—49 **19 Claims**

1. An ultraviolet curing liquid coating composition which, when cured with ultraviolet light in the presence of an appropriate photoinitiator, provides a buffer coating for optical glass fiber having adequate strength at room or expected elevated temperature and stability at such elevated temperature, a high index of refraction above 1.48, and a low tensile modulus which remains low to resist microbending difficulties down to around −60° C., said coating composition consisting essentially of a linear acrylate-terminated polyurethane oligomer including urea groups introduced by the presence in the oligomer of the reaction product with isocyanate functionality of about 30% to about 90% by weight of the acrylate-terminated oligomer of a polyoxyalkylene diamine having a molecular weight in the range of from about 1000 to about 8000 in which the alkylene group contains from 2–4 carbon atoms.

4,609,719

HYDROXYL TERMINATED AZOMETHINES AND HIGH GLASS TRANSITION TEMPERATURE POLYETHER PRODUCTS PRODUCED THEREFROM

Mohinder S. Chattha, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 714,141, Mar. 20, 1985. This application Dec. 20, 1985, Ser. No. 811,182
Int. Cl.[4] C08G *59/62*
U.S. Cl. 528—98 **7 Claims**

1. Polyether products having high glass temperatures and being produced by reacting:

I. epoxy resin, and

II. hydroxyl terminated aromatic azomethines formed by reacting:

(A) aromatic compounds having the formula:

ORC-X-CRO

wherein X is a phenyl group, each R is H or an alkyl group having 1–5 carbon atoms, and the CRO groups are linked through X at the 1,3 or 1,4 positions; and

(B) compounds having the formula

H_2N-Y-OH

wherein Y is a phenyl or pyridine group and the H_2 N group and the OH group are linked through Y at the 1,3 or 1,4 positions,

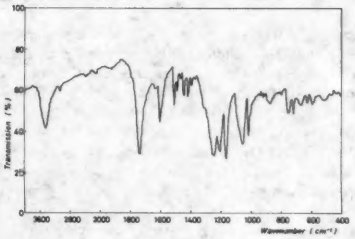
said compounds (A) and (B) being reacted in about a 1:2 molar ratio and under conditions wherein said CRO group of (A) and said NH_2 group of (B) react.

4,609,720

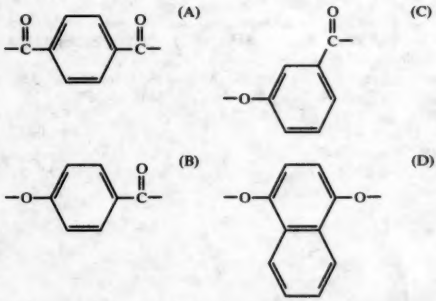
WHOLLY AROMATIC POLYESTER

Tamotsu Yoshimura, Machida, and Masahiko Nakamura, Tokyo, both of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Dec. 19, 1984, Ser. No. 683,517
Int. Cl.[4] C08G *63/60*
U.S. Cl. 528—190 **2 Claims**



1. A wholly aromatic polyester consisting essentially of structural units represented by formulas (A), (B), (C) and (D):



said aromatic polyester containing 5 to 20 mol % of the unit (A), 35 to 65 mol % of the unit (B), 15 to 45 mol % of the unit (C) and 5 to 20 mol % of the unit (D), and the amount of the unit (A) and the amount of the unit (D) being substantially equimolar, and said aromatic polyester showing a logarithmic viscosity of at least 0.4 dl/g (determined as a solution of the aromatic polyester dissolved in a mixed solvent of tetrachloroethane and phenol (1:1 by weight) at a concentration of 0.5% by weight).

4,609,721
PROCESS FOR MAKING MOLDING GRADE POLYETHYLENE TEREPHTHALATE

Gerald S. Kirshenbaum, Fanwood; Michael Goldin, Lawrenceville, both of N.J., and W. Alan Case, Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Filed Jun. 21, 1985, Ser. No. 747,211
Int. Cl.[4] C08G *63/04, 63/34*
U.S. Cl. 528—285 **15 Claims**

1. An improved process for producing polyethylene terephthalate chip having levels of acetaldehyde content and acetaldehyde generation rate and intrinsic viscosity suitable for molding, said process comprising the steps of:

(a) introducing ethylene glycol and terephthalic acid to a reactor in a ratio of from about 1.05 to about 1.35 moles ethylene glycol per mole terephthalic acid and an antimony catalyst in a concentration in the range of from about 325 to about 600 parts antimony per million parts by weight of the product polymer, and heating the resulting mixture at a temperature in the range of about 240° to about 260° C. and a pressure in the range of from about 1 to about 5 atmospheres until said acid is at least about 95 percent esterified to form an esterified monomer mixture;

(b) melt polymerizing the antimony-containing esterified monomer mixture of step (a) in at least two stages at progressively higher temperatures in the range of from about 270° to about 285° C. and at a reduced pressure, until it attains an intrinsic viscosity of at least about 0.64 dl/g;

(c) extruding the melt of step (b) into a water bath for quenching, then pelletizing the quenched polymer so that the average individual volume chip is in the range of from about 2.3 to about 3.5 mm^3; and

(d) crystallizing the polymer pellets by heating in air or an inert atmosphere with agitation at a temperature in the range of about 110° to about 160° C. for a time effective to produce a degree of crystallinity in said polymer in the range of from about 10 percent to less than about 30 percent.

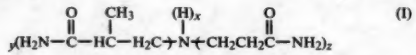
9. Crystallized pellets of polyethylene terephthalate prepared in accordance with the process of claim 1.

4,609,722
PROCESS FOR PREPARING SUBSTANTIALLY LINEAR POLYAMIDE FROM N-ALKYLAMIDE-SUBSTITUTED AMINE AND AQUEOUS AMMONIA

Gerald P. Coffey, Lyndhurst; Benedict S. Curatolo, Bedford Hts., and Robert Sanitra, Stow, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

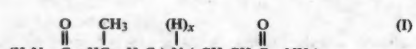
Continuation of Ser. No. 260,492, May 4, 1981, abandoned. This application May 30, 1985, Ser. No. 739,575
Int. Cl.[4] C08G *69/00*
U.S. Cl. 528—315 **12 Claims**

1. A process for preparing a substantially linear polyamide, the process comprising contacting a first monomer of the formula



(I)

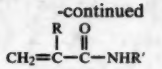
with a second monomer selected from the group consisting of:



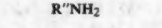
(I)

(II)

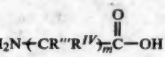
-continued



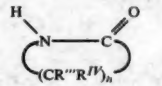
(III)



(IV)



(V)



(VI)

where

R is a hydrogen or methyl radical,

R′ is a C_1–C_{12} alkyl radical,

R″ is a C_1–C_{20} aliphatic, C_5–C_8 cycloaliphatic, or an aromatic radical,

R‴ and R^{IV} are independently a hydrogen or a C_1–C_4 alkyl radical,

m is an integer of 1–11,

n is an integer of 2–11,

x is an integer of 0–2

y is an integer of 0–3,

z is an integer of 0–3, and

$x+y+z=3$,

in a molar ratio of about 1:1 to about 9:1 in the presence of at least a stoichiometric amount, based on the combined moles of the monomers, of aqueous ammonia at a temperature of at least about 200° C. and autogenous pressure.

4,609,723
POLYAMIDE FROM BIS(AMINOMETHYL)TRICYCLODECANE

Edgar R. Rogier, Minnetonka; H. Gordon Kanten, Minneapolis, and Dwight E. Peerman, Minnetonka, all of Minn., assignors to Henkel Corportion, Minneapolis, Minn.

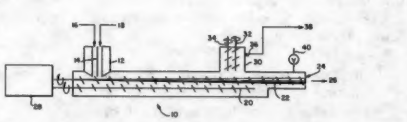
Filed Jul. 18, 1984, Ser. No. 632,518
Int. Cl.[4] C08G *69/34*
U.S. Cl. 528—339.3 **5 Claims**

1. A polyamide comprising the amidification product of bis(aminoethyl)tricyclodecane and a dicarboxylic acid derived from a monomeric, unsaturated fatty acid containing from 8 to 24 carbon atoms.

4,609,724
PROCESS FOR PREPARING AND PURIFYING ALKOXYPHOSPHAZENE POLYMER

Robert A. Elefritz, Ordmond Beach, Fla.; William M. Cole, Norton, Ohio, and Charles R. Johnson, Hot Springs Village, Ark., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 29, 1985, Ser. No. 730,410
Int. Cl.[4] C08G *79/04*
U.S. Cl. 528—399 **16 Claims**



1. A process for preparing and purifying alkoxyphosphazene polymer comprising the steps of

(a) admixing linear dichlorophosphazene polymer dissolved in solvent consisting by volume of 100% to 80% cyclohexane and 0% to 20% C_5–C_7 alkane and alkali metal alkoxide dissolved in tetrahydrofuran, the ratio of tetrahydrofuran to

cyclohexane and C_5–C_7 alkane being at least about 1.00:1, said linear dichlorophosphazene polymer having a degree of polymerization ranging from about 20 to about 50,000, said alkali metal alkoxide having the formula MOR wherein M is selected from the group consisting of sodium, potassium and lithium and wherein R is selected from the group consisting of alkyl having from 1 to about 12 carbon atoms and fluoroalkyl having from 1 to about 12 carbon atoms;

(b) reacting the linear dichlorophosphazene polymer and alkali metal alkoxide to form a reaction solution with alkoxyphosphazene polymer dissolved therein and with alkali metal chloride colloidally dispersed in the polymer solution,

(c) removing the alkali metal chloride to form a desalted reaction solution containing from about 5 to about 15% by weight normally solid material dissolved therein,

(d) admixing with the desalted reaction solution non-solvent selected from the group consisting of (i) cyclohexane, (ii) alkane the same as that which formed part of the solvent for the dichlorophosphazene polymer in step (a), and (iii) both cyclohexane and said alkane, in an amount sufficient to cause coagulation thereby forming a higher viscosity rubber phase enriched in said polymer and a lower viscosity liquid phase depleted in said polymer and recovering rubber phase containing from about 50% to about 60% by weight normally solid material;

(e) evaporating residual solvent and residual non-solvent from said recovered rubber phase.

4,609,725

CARDIAC ATRIAL PEPTIDES

Stephen F. Brady, Philadelphia, Pa.; Mary A. Napier, Edison, N.J.; Ruth F. Nutt, Green Lane, Pa., and Richard L. Vandlen, Summit, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 9, 1984, Ser. No. 658,350

Int. Cl.[4] C07K *7/12*

U.S. Cl. 530—324 **4 Claims**

1. A peptide comprising one of the amino acid sequences: A-Cys-Phe-Gly-Gly-Arg-X-Asp-Arg-Ile-Gly-Ala-Gln-Ser-Gly-Leu-Gly-Cys-Asn-Ser-Phe-Arg-(I-Tyr)-B wherein X is Ile or Met,

A is absent or present and if present is:

Ser—
Ser—Ser—
Arg—Ser—Ser—
Arg—Arg—Ser—Ser—
Leu—Arg—Arg—Ser—Ser—
Ser—Leu—Arg—Arg—Ser—Ser—
Arg—Ser—Leu—Arg—Arg—Ser—Ser—
Pro—Arg—Ser—Leu—Arg—Arg—Ser—Ser—
Gly—Pro—Arg—Ser—Leu—Arg—Arg—Ser—Ser—
Ala—Gly—Pro—Arg—Ser—Leu—Arg—Arg—Ser—Ser—
Leu—Ala—Gly—Pro—Arg—Ser—Leu—Arg—Arg—Ser—Ser—

and B is absent or present and if present is -Arg or -Arg-Arg, and wherein the I atom is nonradioactive or radioactive and the peptide is linear or cyclized by means of covalent bonds between the two cysteine residues.

4,609,726

DISAZO DYES DERIVED FROM 3,3'-DIHALO-5,5'-DICHLOROBENZIDINE

Reinhard Kemper, Heidelberg, and Egon Liedek, Esslingen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

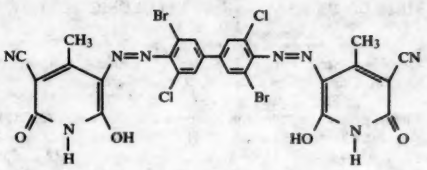
Filed Mar. 14, 1984, Ser. No. 588,972

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1983, 3309718

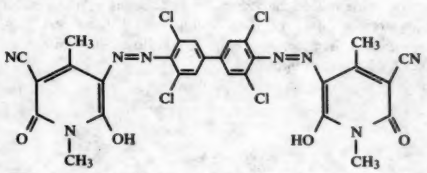
Int. Cl.[4] C09B *31/153, 35/031, 33/12;* D06P *1/52*

U.S. Cl. 534—760 **2 Claims**

1. A compound of the formula



2. A compound of the formula



4,609,727

5-C_{1-4}ALKOXY-2-C_{1-2}ALKYL-2',4'-DINITRO-6'-HALO-4-SUBSTITUTED AMINO-AZOBENZENES

Klaus Koerte, Ettingen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

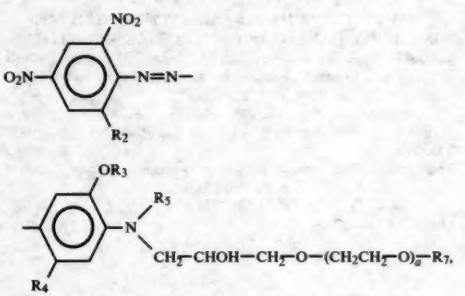
Filed Dec. 16, 1982, Ser. No. 450,289

Claims priority, application Switzerland, Dec. 21, 1981, 8159/81; Dec. 21, 1981, 8160/81

Int. Cl.[4] C09B *29/01, 29/34, 29/08;* D06P *1/18*

U.S. Cl. 534—858 **17 Claims**

1. A compound of the formula



wherein

R_2 is halo,

R_3 is C_{1-4}alkyl,

R_4 is methyl or ethyl,

R_5 is C_{1-8}alkyl,

R_7 is phenyl; phenyl substituted by 1 or 2 substituents independently selected from hydroxy, chloro, bromo, methyl and C_{1-4}alkoxy; benzyl; benzyl substituted by 1 or 2 substituents independently selected from hydroxy, chloro, bromo, methyl and C_{1-4}alkoxy; allyl; allyl monosubstituted by halo; or propyn-2-yl monosubstituted by halo, with the proviso that R_7 may be allyl, allyl monosubstituted by halo or propyn-2-yl monosubstituted by halo only when a is 0, and

a is 0 or 1,

wherein each halo is independently fluoro, chloro, bromo or iodo.

4,609,728

METHOD OF TREATING A CELLULOSIC HOLLOW FIBER

Kurt Spranger, Ammerbuch-Entringen, and Bernd A. W. Beck, Hechingen-Stein, both of Fed. Rep. of Germany, assignors to Gambro Dialysatoren KG, Fed. Rep. of Germany

Filed Jul. 7, 1983, Ser. No. 511,784

Claims priority, application Sweden, Jun. 15, 1983, 8303413

Int. Cl.[4] B01D *13/04;* **B29D** *27/04;* **D01F** *11/02*

U.S. Cl. 536—56 **12 Claims**

1. A process for making a dry, sterile dialyzer, said process comprising providing a dialyzer containing dried cuproammonium regenerated cellulose hollow fibers, treating said hollow fibers in said dialyzer with an aqueous solution including water and glycerol, then drying the hollow fibers in the dialyzer and then sterilizing the dry hollow fibers in the dialyzer by heat or radiation.

4,609,729

ORGANOSOLUBLE C_3–C_4 HYDROXYALKYL ETHYL CELLULOSE ETHERS

Joseph L. Garner, Sanford, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 3, 1985, Ser. No. 719,183

Int. Cl.[4] C08B *11/193*

U.S. Cl. 536—91 **13 Claims**

1. A C_3–C_4 hydroxyalkylethylcellulose ether which is substantially soluble at ambient temperatures in toluene.

4,609,730

7-[SUBSTITUTED IMINO-2-(2-AMINOTHIAZOL-4-YL)-ACETAMIDO]-3(2,2-DIHALOVINYL OR ETHYNYL)-3-CEPHEM-4-CARBOXYLIC ACID (SYN ISOMERS), HAVING ANTIMICROBIAL ACTIVITIES

Takao Takaya, Kawanishi; Takashi Masugi, Ikeda, and Kohji Kawabata, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Nov. 15, 1983, Ser. No. 552,065

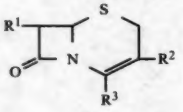
Claims priority, application United Kingdom, Nov. 22, 1982, 8233215

The portion of the term of this patent subsequent to Aug. 7, 2001, has been disclaimed.

Int. Cl.[4] C07D *501/22;* **A61K** *31/545*

U.S. Cl. 514—202 **17 Claims**

1. Cephem compounds of the formula:



wherein

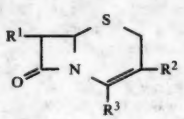
R^1 is amino, lower alkanoylamino, ar(lower)alkanoylamino, amino- or alkanoylthiazolyl(lower)alkanoylamino having a lower alkoxyimino, amino- or alkanoylthiazolyl(lower)alkanoylamino having a ar(lower)alkoxycarbonyl(lower)alkoxyimino, aminothiazolyl(lower)alkanoylamino having a carboxy(lower)alkoxyimino, or aminothiadiazolyl(lower)alkanoylamino having a lower alkoxyimino,

R^2 is 2,2-dihalovinyl, and

R^3 is carboxy or protected carboxy, and

pharmaceutically acceptable salts thereof.

6. Cephem compounds of the formula:



wherein

R^1 is amino, lower alkanoylamino, ar(lower)alkanoylamino, amino- or alkanoylthiazolyl(lower)alkanoylamino having a lower alkoxyimino, amino- or alkanoylthiazolyl(lower)alkanoylamino having a ar(lower)alkoxycarbonyl(lower)alkoxyimino, aminothiazolyl(lower)alkanoylamino having a carboxy(lower)alkoxyimino, or aminothiadiazolyl(lower)alkanoylamino having a lower alkoxyimino,

R^2 is ethynyl, and

R^3 is carboxy or protected carboxy, and pharmaceutically acceptable salts thereof.

13. A method for producing a pharmaceutical antimicrobial composition which comprises mixing an effective amount of a compound of claim 1 or pharmaceutically acceptable salt thereof as an active ingredient with an inert carrier.

16. A method for producing a pharmaceutical antimicrobial composition which comprises mixing an effective amount of a compound of claim 6 or pharmaceutically acceptable salt thereof as an active ingredient with an inert carrier.

4,609,731

PROCESS FOR BROMINATING ERGOT ALKALOIDS

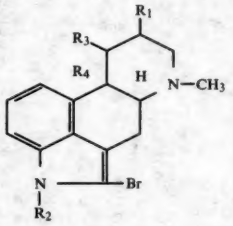
Milan Jurgec; Rudolf Rucman, both of Ljubljana; Branko Stanovnik, Vrhnika, and Miha Tisler, Ljubljana, all of Yugoslavia, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 78,978, Oct. 10, 1979, abandoned. This application Apr. 18, 1980, Ser. No. 141,304

Int. Cl.[4] C07D *457/04, 457/06*

U.S. Cl. 544—346 **10 Claims**

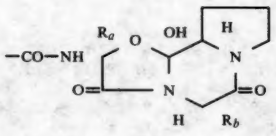
1. An improved process for the production of a compound of formula I



I

wherein

R_1 is carboxyl, alkoxy(C_{1-5})carbonyl, amido, alkyl(C_{1-5})amido, di(alkyl(C_{1-5}))amido or an amido radical of formula II



II

wherein

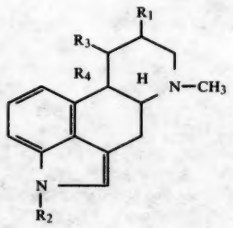
R_a is alkyl(C_{1-4}),

R_b is alkyl(C_{1-4}) or benzyl, and

R_2 is hydrogen or alkyl(C_{1-4}), and

either

R_3 is hydrogen and R_4 is hydrogen or alkoxy(C_{1-4})
or
R_3 and R_4 together are a single bond,
wherein the improvement comprises brominating a compound of formula III



III

wherein
R_1 to R_4 are as defined above,
with a bromine complex of 3-bromo-6-chloro-2-methyl-imidazo[1,2-b]pyridazine.

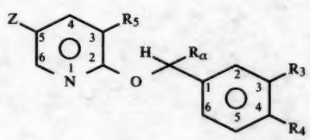
4,609,732

2-(ALPHA-PERHALOALKYLBENZYLOXY)PYRIDYL INSECTICIDE INTERMEDIATES

Ernest L. Plummer, Yardley, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jan. 3, 1986, Ser. No. 816,175
Int. Cl.[4] C07D *405/12*
U.S. Cl. 546—269 **11 Claims**

1. A 2-(alpha-perhaloalkylbenzyloxy)pyridyl compound of the formula



wherein
R_α is a lower perhaloalkyl substituent;
R_3 is selected from the group consisting of -hydrogen, -halogen and -phenylthio;
R_4 is selected from the group consisting of -hydrogen, -halogen, -lower alkyl, -lower alkoxy, -lower alkoxyalkyl, -lower haloalkoxy, -lower alkylthio, -lower alkylsulfonyl, and -diallylamino; or
R_3 and R_4 together constitute a $—OCH_2O—$, $—CH_2C(CH_3)_2O—$, or $—CF_2CF_2O—$ bridge;
R_5 is -hydrogen or -lower alkyl; and
Z is -amino or -nitro.

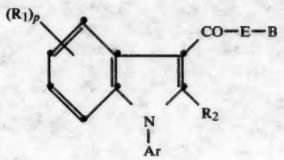
4,609,733

3-KETO-SUBSTITUTED-N-PYRIDYLINDOLES

Stephen K. Boyer, Far Hills; Karl O. Gelotte, Watchung, and Joseph Bach, Parsippany, all of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 27, 1984, Ser. No. 686,777
Int. Cl.[4] C07D *401/04*
U.S. Cl. 546—273 **6 Claims**

1. A compound of the formula



(IV)

wherein
Ar is 3- or 4-pyridyl or 3- or 4-pyridyl substituted by lower alkyl;
R_1 is hydrogen, halogen, trifluoromethyl, lower alkyl, hydroxy, acylated or etherified hydroxy, lower alkylthio; or two of R_1 on adjacent carbon atoms represent ethylenedioxy or methylenedioxy;
p is 1 or 2;
R_2 represents hydrogen or lower alkyl;
E represents C_1–C_{11} alkylene, C_1–C_6 alkylenephenylene, C_1–C_6 alkylene-(thio or oxy)-lower alkylene, C_1–C_6 alkylene-(thio or oxy)-phenylene, C_1–C_6-alkylenephenylene-lower alkylene, phenylene-lower alkylene; or E represents a direct bond;
B represents carboxy, esterified carboxy or carbamoyl; and wherein within the above definitions acylated hydroxy represents lower alkanoyloxy, benzoyloxy, benzoyloxy substituted on phenyl ring by lower alkyl, halogen or lower alkoxy, or nicotinoyloxy; etherified hydroxy represents lower alkoxy, benzyloxy, benzyloxy substituted on the phenyl ring by lower alkyl, halogen or lower alkoxy, or pyridylmethoxy; and esterified carboxy represents carboxy esterified in the form of a pharmaceutically acceptable ester; or a pharmaceutically acceptable salt thereof.

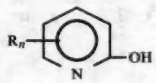
4,609,734

PROCESS FOR THE PRODUCTION OF 2-HYDROXYPYRIDINES FROM 2-PYRIDINE CARBOXYLIC ACID-N-OXIDES

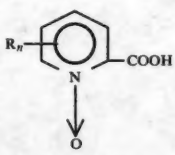
Daniel Quarroz, Visp, Switzerland, assignor to Lonza Ltd., Gampel, Switzerland

Filed Nov. 8, 1983, Ser. No. 549,784
Int. Cl.[4] C07D *213/30, 213/55*
U.S. Cl. 546—290 **13 Claims**

1. Process for the production of 2-hydroxypyridine having the formula:



from a 2-pyridine carboxylic acid-N-oxide having the formula:



wherein (i) R is H or an alkyl selected from the group consisting of methyl, ethyl, octyl, butyl, propyl, isopropyl, isobutyl, 3-methyl-1-butyl, 2-butyl, 2-butyl, 2-pentyl, heptyl, 2-methyl-2-butyl, hexyl, 2-ethyl-1-butyl, 2-methyl-1-butyl, 3-methyl-1-pentyl, 1-pentyl, isohexyl, 2-hexyl and 3-methyl-2-pentyl, and

n is 1 to 4, (ii) R is —COOH, R is located in the 3-, 4-, 5- or 6-position, and n is 1, (iii) n is 2, R is —COOH, and the two Rs are in the 3- and 4-positions, the 4- and 5-positions and the 4- and 6-positions, (iv) R is phenyl, and n is 1, (v) R is napthyl, and n is 1, or (vi) R is benzyl, and n is 1, comprisng (a) converting the 2-pyridine carboxylic acid-N-oxide using a lower aliphatic carboxylic acid anhydride in the presence of a tertiary amine to a conversion product and (b) saponifying the conversion product to produce the 2-hydroxypyridine.

4,609,735

CERTAIN ARYLOXY-4-CHLORO-2-BUTANOL INTERMEDIATES

Carl D. Lunsford, and Ying-Ho Chen, both of Richmond, Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Division of Ser. No. 418,940, Sep. 16, 1982, abandoned, which is a division of Ser. No. 813,056, Jul. 5, 1977, Pat. No. 4,379,167, which is a continuation-in-part of Ser. No. 730,498, Oct. 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 618,984, Oct. 2, 1975, abandoned, which is a continuation-in-part of Ser. No. 518,122, Oct. 25, 1974, abandoned. This application Sep. 11, 1984, Ser. No. 649,333

Int. Cl.[4] C07D *213/64;* C07C *103/38, 49/82, 43/23*

U.S. Cl. 546—302 **15 Claims**

1. A 1-aryloxy-4-chloro-2-butanol compound having the formula:

ArO—CH_2—CHOH—CH_2—CH_2—Cl

wherein Ar is 1-naphthyl, 2-naphthyl, indene-4-yl, indene-5-yl, 3-chloro-2-pyridyl, 5-chloro-2-pyridyl, or phenyl substituted with one or two radicals selected from lower alkyl, acetyl, acetylamino, halo, trifluoromethyl, and phenyl.

4,609,736

RHODANINES USEFUL AS A THERAPEUTIC AGENT FOR DIABETIC COMPLICATIONS

Yoshitaka Ohishi, Uji; Michiko Nagahara, Yasu; Yoshitaka Takehisa, Omihachiman; Motoyuki Yajima; Shigeki Kurokawa, both of Otsu; Norio Kajikawa, Kyoto, and Akira Itoh, Otsu, all of Japan, assignors to Kaken Pharmaceutical Co., Ltd., Tokyo, Japan

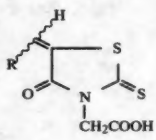
Filed Nov. 28, 1984, Ser. No. 675,579

Claims priority, application Japan, Nov. 29, 1983, 58-226488

Int. Cl.[4] C07D *277/36;* A61K *31/425*

U.S. Cl. 548—183 **2 Claims**

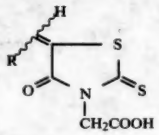
1. A rhodanine compound having the following formula (I):



(I)

wherein R is t-butyl, 1,3-pentadienyl or 2,6-dimethyl-1,5-heptadienyl; or a nontoxic salt thereof.

2. A pharmaceutical composition as a therapeutic agent for diabetic complications which comprises as an essential active ingredient an effective amount of a rhodanine compound having the following formula (I):



(I)

wherein R is t-butyl, 1,3-pentadienyl or 2,6-dimethyl-1,5-heptadiene; or a nontoxic salt thereof.

4,609,737

NOVEL 2-GUANIDINOTHIAZOLINE COMPOUNDS, AND PROCESS FOR PREPARING THEM

Yasufumi Hirata, Saitama, and Isao Yanagisawa, Tokyo, both of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

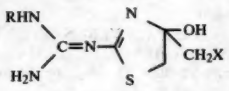
Division of Ser. No. 597,234, Apr. 5, 1984, Pat. No. 4,562,261. This application Jun. 7, 1985, Ser. No. 742,581

Claims priority, application Japan, Jun. 7, 1983, 58-102206

Int. Cl.[4] C07D *277/18*

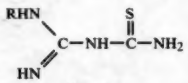
U.S. Cl. 548—184 **2 Claims**

1. A process for preparing 2-quanidinothiazoline compounds of the formula



wherein R is hydrogen or lower alkyl and X is halogen or the acid addition salts thereof which comprises reacting a 1,3-dihalogenacetone of the general formula

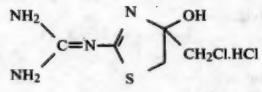
wherein X represents a halogen atom, and an amidinothiourea of the general formula



wherein R represents a hydrogen atom or a lower alkyl group.

2. A process for preparing famotidine comprising:

(a) reacting a compound of the formula



with thiourea to obtain the compound N''-[4[[(aminoiminomethyl)thio]methyl]-2-thiazolyl]-guanidine dihydrochloride;

(b) reacting the compound produced in step (3) with β-chloropropionitrile in the presence of isopropanol and sodium hydroxide to obtain the compound N''-[4[[(2-cyanoethyl)thio]methyl]-2-thiazolyl]-guanidine isolating and drying said compound;

(c) reacting the compound produced in step (b) with hydrogen chloride and methanal to obtain the compound methyl 3-[[[2-[(diaminomethylene)amino]-4-thiazolyl]-methyl]thio]propionimidate isolating and drying said compound; and

(d) reacting the compound produced in step (c) with sulfamide in the presence of lower alkanol to obtain said famotidine.

4,609,738

NOVEL DYES, THEIR PRODUCTION AND THEIR USE

Peter Möckli, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

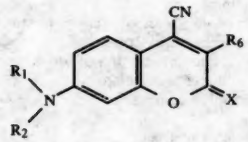
Division of Ser. No. 949,939, Oct. 10, 1978, abandoned. This application Sep. 30, 1982, Ser. No. 430,415

Claims priority, application Luxembourg, Oct. 13, 1977, 78311

Int. Cl.[4] C07D *405/04, 413/04*

U.S. Cl. 548—217 8 Claims

1. A compound of the formula

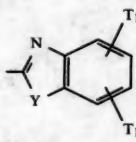


in which

R_1 and R_2 independently of one another are each (a) hydrogen, (b) alkyl of 1 to 7 carbon atoms which is unsubstituted or substituted by hydroxyl, low-molecular alkoxy, carbalkoxy, phenoxy, cyano, carbonamido, halogen or acetoxy, (c) cyclohexyl or methylcyclohexyl, (d) benzyl, phenethyl, or β-phenyl-β-hydroxyethyl, (e) unsubstituted phenyl or naphthyl (f) or phenyl or naphthyl substituted by lower alkyl, lower alkoxy, acetylamino, halogen, hydroxyl, cyano, rhodan, amino, C_1–C_4-mono- or dialkylamino, phenylamino, N-phenyl-N-C_1–C_4-alkylamino, phenyl, phenoxy, nitro, acetyl or acetoxy,

X is =NH or =O, and

R_6 is the radical



in which

Y is oxygen, or the grouping

T_{14} is hydrogen, alkyl (C_1–C_4) or benzyl, phenethyl or β-phenyl-β-hydroxyethyl,

T_{12} is hydrogen, alkyl (C_1–C_4), halogen alkoxy (C_1–C_4), and

T_{13} is hydrogen or alkyl (C_1–C_4), or T_{12} and T_{13} together form a further fused-on, unsubstituted carbocyclic aromatic ring or a carbocyclic aromatic ring substituted with methyl or chlorine.

4,609,739

SYNTHETIC ROUTES TO BENZOFURANS AND BENZOTHIOPHENES AND INTERMEDIATES THEREFOR

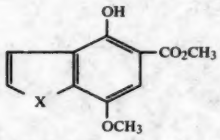
Ronald B. Gammill, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 6, 1984, Ser. No. 668,765

Int. Cl.[4] C07D *307/86, 333/54, 333/24, 307/54*

U.S. Cl. 549—57 4 Claims

1. A process for preparing a compound of the formula IV



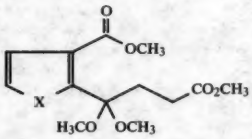
IV

wherein X is

(a) —O—, or

(b) —S—;

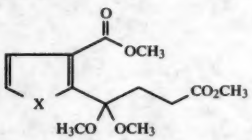
which comprises: cyclizing a compound of the formula III



III

using a Dieckmann-type cyclization performed in the presence of potassium tert-butoxide in tetrahydrofuran at −80° to 0° C. and followed by treatment with anhydrous hydrochloric acid.

2. A compound of the formula III



III

wherein x is

(a) —O—, or

(b) —S—.

4,609,740

DERIVATIVES OF FLUORESCEIN

Avner Rotman, Rehovot, Israel, assignor to Yeda Research and Development Company Ltd., Rehovot, Israel

Filed May 20, 1982, Ser. No. 380,472

Int. Cl.[4] C07D *311/82*

U.S. Cl. 549—223 2 Claims

1. Azidofluorescein diacetate.

2. Azidofluorescein.

4,609,741
PHTHALIC ACID DERIVATIVES WHICH ARE SUBSTITUTED BY 2-PROPYNYLOXY GROUPS, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Roland Darms, Therwil; Vratislav Kvita, Reinach, and Charles E. Monnier, Villars-sur-Glâne, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

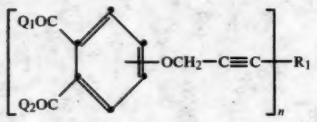
Filed Aug. 9, 1984, Ser. No. 639,048

Claims priority, application Switzerland, Aug. 18, 1983, 4513/83

Int. Cl.[4] C07D *209/48, 307/89*

U.S. Cl. 549—241 **8 Claims**

1. A phthalic acid derivative of the formula I:



(I)

in which Q_1 and Q_2 independently of one another are —OH or $—O^-M^+$, or Q_1 and Q_2 together form the grouping —O—, $—[O^-]_2M_1^{++}$ or $—N(R_2)—$, M^+ is an alkali metal ion, a trialkylammonium ion having 3–24 carbon atoms or a quaternary ammonium ion and M_1^{++} is an alkaline earth metal ion, R_2 is an alkyl group or an unsubstituted or substituted aryl group, n is 1 or 2 and R_1 is hydrogen, if n is 1, or a direct bond, if n is 2.

4,609,742
DIFFICOL, INTERMEDIATE IN ANTIBIOTIC PREPARATION

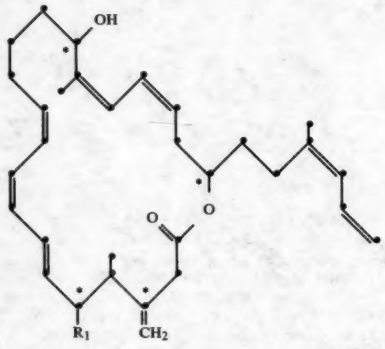
Eugene D. Thorsett, Fanwood; Joanne M. Williamson, Cranford, and Kenneth E. Wilson, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.Y.

Filed Feb. 4, 1985, Ser. No. 697,806

Int. Cl.[4] C07D *313/00*

U.S. Cl. 549—271 **3 Claims**

1. A compound of the formula:



I

wherein R_1 is hydrogen or hydroxy.

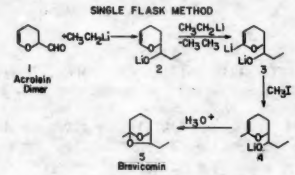
4,609,743
METHOD FOR BREVICOMIN SYNTHESIS AND USE IN BEETLE CONTROL

Theodore Cohen, and Mahadevan Bhupathy, both of Pittsburgh, Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Filed Apr. 17, 1984, Ser. No. 601,168

Int. Cl.[4] C07D *311/00*

U.S. Cl. 549—397 **36 Claims**



1. A process for the production of brevicomin comprising reacting acrolein dimer sequentially with:
(a) ethyllithium
(b) a methylating agent, and
(c) aqueous protonic acid, whereby a mixture of the endo and exo isomers of brevicomin will be produced.

21. A process for the production of brevicomin comprising reacting acrolein dimer sequentially with:
(a) an ethyl metallic compound,
(b) alkyllithium,
(c) a methylating agent, and
(d) aqueous protonic acid, whereby a mixture of the endo and exo isomers of brevicomin will be produced.

4,609,744
4-OXO-BENZOPYRAN CARBOXYLIC ACIDS

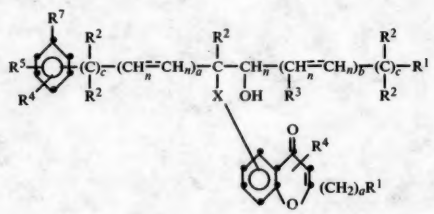
Robert N. Young, Senneville; Joshua Rokach, Laval; Haydn R. Williams, Dollard Des Ormeaux, all of Canada, Masatoshi Kakushima, Yokohama, Japan, and Yvan Guindon, Ile Bizard, Montreal, Canada, assignors to Merck Frosst Canada Inc., Kirkland, Canada

Continuation-in-part of Ser. No. 487,331, Apr. 21, 1983, abandoned. This application Mar. 19, 1984, Ser. No. 591,343

Int. Cl.[4] C07D *311/22, 311/24*

U.S. Cl. 549—402 **5 Claims**

1. Compound having the formula:



and pharmaceutically acceptable salts thereof wherein:
X is O, S, SO, or SO_2;
n is 0 to 2 as required to maintain four bonds to carbon; the broken lines represent optional double and triple bonds;
a, b, and c are each independently 0 to 5;
R^1 is $COOR^2$;
R^2 and R^3 are each independently H or lower alkyl;
R^4 is H, alkyl, halogen, haloalkyl, benzyl, benzyl substituted with at least one R^7, aryl, aryl substituted with at least one R^5, NO_2, CN, SCF_3, OR^3, O-benzyl, O-benzyl substituted with at least one R^5, O-aryl; O-aryl substituted with at least one R^5, SR^{18}, NR^2R^3, $S(O)R^{18}$, or $S(O_2)R^{20}$;
R^5 is H, alkyl, halogen, haloalkyl, benzyl, benzyl substituted

with at least one R^3, NO_2, CN, SCF_3, OR^3, O-benzyl, O-benzyl substituted with at least one R^3, O-aryl, SR^3, NR^2R^3, $S(O)R^{19}$, or $S(O_2)R^{19}$;

R^7 is H, alkylthioalkyl, alkylthiobenzyl or alkylthioaryl;

R^{18} is alkyl, haloalkyl, benzyl, or benzyl substituted with at least one R^3;

R^{19} is loweralkyl; and

R^{20} is R^{18} or NR^2R^3.

4,609,745

WATER-SOLUBLE ZIRCONIC ACID ESTERS

Dieter Barfurth, Troisdorf-Spich, and Heinz Nestler, Troisdorf Eschmar, both of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

Filed Jan. 29, 1985, Ser. No. 696,021

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1984, 3404949

Int. Cl.[4] C07F 7/00

U.S. Cl. 556—40 6 Claims

1. A zirconic acid ester of the formula

$$Zr(OR)_n(OR')_o(C_5H_7O_2)_p$$

wherein:

R is an alkyl moiety of 1 to 8 carbon atoms,

R' is $-[A''-O]_q-R$,

A is $-CH(CH_3)-CH_2-$ or $-CH_2-CH_2-$

the moiety $C_5H_7O_2$ represents the acetyl acetone moiety, and

n is 0–2,

o is 1–3,

p is 1–2, on the condition that $n+o+p=4$, and

q is 1 to 8.

4,609,746

TITANIUM CHELATES AND PREPARATION OF THESE CHELATES

Dieter Barfurth, Troisdorf-Spich, and Heinz Nestler, Troisdorf-Eschmar, both of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

Filed Oct. 9, 1984, Ser. No. 658,489

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1983, 3337098

Int. Cl.[4] C07F 7/28

U.S. Cl. 556—40 12 Claims

1. A chelate of tetravalent titanium, comprising only acetyl acetone and triethanolamine as ligands with a molar ratio of the two chelating agents of 1 to 2:1 to 0.67 and a total of 4 esterifiable OH-groups per titanium atom.

4,609,747

NOVEL WATER-SOLUBLE ANTIMONY COMPOUNDS AND THEIR PREPARATION

Marilyn W. Blaschke, Pearland; Richard F. Miller, and John Link, both of Humble, all of Tex., assignors to Atlantic Richfield, Los Angeles, Calif.

Filed Nov. 19, 1984, Ser. No. 672,555

Int. Cl.[4] C07F 9/90

U.S. Cl. 556—77 9 Claims

1. A method of preparing water-soluble antimony compounds comprising:

(a) reacting an alkoxyalkylamine with a hydroxycarboxylic acid and

(b) reacting the product of (a) with an antimony oxide

4,609,748

NOVEL SILYL REAGENTS

Robin G. Shepherd, Maidenhead, England, assignor to John Wyeth & Brother, Ltd., Maidenhead, England

Continuation-in-part of Ser. No. 506,279, Jun. 21, 1983, Pat. No. 4,526,970. This application Apr. 16, 1985, Ser. No. 723,772

Claims priority, application United Kingdom, Jun. 25, 1982, 8218465

Int. Cl.[4] C07F 7/10

U.S. Cl. 556—410 6 Claims

1. A compound of Formula I

$$R^bR^cR^dSiNCS$$

wherein R^b is a branched chain alkyl of 3–10 carbon atoms, cycloalkyl of 4–8 carbon atoms, or branched chain aralkyl of 8–12 carbon atoms and R^c and R^d are selected from alkyl of 1–10 carbon atoms, cycloalkyl of 4–8 carbon atoms, aralkyl of 7–12 carbon atoms or aryl with the proviso that R^c and R^d are not the same group as R^b.

4,609,749

METHOD FOR THE SIMULTANEOUS PREPARATION OF CARBOXYLIC ACID TRIMETHYLSILYL ESTERS AND SILYLATED CARBOXYLIC ACID AMIDES

Hans-Joachim Kötzsch, Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, both of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

Filed Nov. 22, 1985, Ser. No. 800,979

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1984, 3443961

Int. Cl.[4] C07F 7/10

U.S. Cl. 556—411 10 Claims

1. A method for the simultaneous preparation of carboxylic acid trimethylsilyl esters and trimethylsilyl carboxylic acid amides, comprising reacting a carboxylic acid anhydride of the formula $(RCO)_2O$ at 40° to 130° C., preferably at 50°–90° C., with hexamethyldisilazane to form carboxylic acid trimethylsilyl esters and mono-trimethylsilyl carboxylic acid amides.

4,609,750

SILOXANES WITH BETAINE GROUPS, THEIR SYNTHESIS AND USE IN HAIR CARE PRODUCTS

Hans-Joachim Kollmeier, Essen; Rolf-Dieter Langenhagen, Hattingen-Niederwenigern, and Klaus Hoffmann, Essen, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Jun. 13, 1985, Ser. No. 744,469

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1984, 3422268

Int. Cl.[4] C07F 7/10

U.S. Cl. 556—419 21 Claims

1. Compounds having the formula

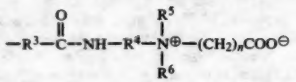
I

$$R_2^1R^2SiO-\left[\begin{array}{c}R^1\\|\\SiO-\\|\\R^1\end{array}\right]_x\left[\begin{array}{c}R^1\\|\\SiO-\\|\\R^2\end{array}\right]_y SiR_2^1R^2$$

in which

R^1 can represent the same or different groups in the molecule and may be an alkyl radical with 1 to 18 carbon atoms, an aryl radical or a polyoxyalkylene radical with the proviso that at least 70% of the R^1 radicals are methyl radicals,

R^2 may be the same as R^1, with the proviso that at least one R^2 radical represents



in which
R^3 is a divalent alkylene radical with 2 to 12 carbon atoms,
R^4 is a divalent alkylene radical with 2 to 6 carbon atoms,
R^5 and R^6 are the same or different and represent an alkyl radical with 1 to 4 carbon atoms or a benzyl radical, and
n=1, 2, or 3,
x has a value of 0 to 200, and
y has a value of 1 to 50.

4,609,751

METHOD OF HYDROLYZING CHLOROSILANES

Abraham L. Hajjar, Scotia, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation-in-part of Ser. No. 330,347, Dec. 14, 1981, abandoned. This application Aug. 18, 1983, Ser. No. 524,469

Int. Cl.[4] C07F *7/08*

U.S. Cl. 556—456 **6 Claims**

1. In a chlorosilanes hydrolysis method comprising hydrolyzing chlorosilane in a stoichiometric excess of water to produce a polysiloxane hydrolyzate and an aqueous hydrogen chloride solution, whereby hydrogen chloride is recycled by heating the resulting aqueous hydrogen chloride solution obtained from the hydrolysis to form a constant boiling HCl-water azeotrope and anhydrous hydrogen chloride requiring a major amount of input energy, the improvement which comprises hydrolyzing the chlorosilane in substantially a stoichiometric equivalence of water to produce substantially the same polysiloxane hydrolyzate as obtained with excess water, anhydrous hydrogen chloride and a saturated aqueous solution of hydrogen chloride, whereby the requirement of a major amount of input energy is avoided.

4,609,752

PROCESS AND APPARATUS FOR CONTINUOUSLY SYNTHESIZING ALKOXYPOLYSILOXANES

Herbert Giesing; Götz Koerner; Václav Kropac, all of Essen; Hans-Jürgen Patzke, Gelsenkirchen-Resse; Herbert Quilitsch, Heiligenhaus; Harald Rau, Essen; Eckehard Schamberg, Essen; Fritz Spieker, Essen, and Christian Weitemeyer, Essen, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

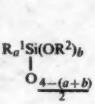
Filed Jul. 8, 1985, Ser. No. 752,937

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1984, 3425067

Int. Cl.[4] C07F *7/08, 7/18*

U.S. Cl. 556—457 **14 Claims**

1. A process for continuously synthesizing alkoxypolysiloxanes having the formula



in which
R^1 is an alkyl or aryl radical,
R^2 is a lower alkyl radical with 1 to 4 carbon atoms,
a is not greater than 1.5,
b is not greater than 2, and
a+b is not greater than 3,
by solvolysis of chlorosilanes having the formula

with an excess of alcohol and less than an equivalent amount of water, based on the silicon-linked chlorine, and partial condensation of the solvolysis products, comprising continuously feeding a silane or a silane mixture and a mixture of hydrogen chloride-containing alcohol and water into the first stage of a reactor having a plurality of sequential stages, wherein each subsequent stage is positioned higher than the preceding stage, continuously withdrawing the reaction product formed together with excess hydrogen chloride-containing alcohol after a residence time of 30 to 180 minutes from the last sequential stage of the reactor and carrying off the undissolved, gaseous portion of hydrogen chloride from the last stage, wherein the temperature of the reaction mixture or the reaction product as it flows through the reactor is raised from a temperature of −17 to +30° C., to a range of +30° to +80° C., the temperature gradient being at least 10° C., and separating the excess alcohol and dissolved hydrogen chloride from the reaction product formed exterior of the reactor and recycling the separated hydrogen chloride-containing alcohol to the initial stage of the reactor.

4,609,753

DIPHENYL ETHERS HAVING HERBICIDAL ACTIVITY

Gerard B. Paerels, and Cornelis W. Raven, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Filed May 2, 1984, Ser. No. 606,269

Claims priority, application Netherlands, May 6, 1983, 8301605; May 6, 1983, 8301606; May 9, 1983, 8301634

Int. Cl.[4] C07C *143/67, 143/90*; A01N *41/00*

U.S. Cl. 560—13 **3 Claims**

2. A method of controlling undesired plants in agricultural and horticultural crop, characterized in that the crop or the soil destined for the crop is treated with a composition as claimed in claim 3 in a dosage from 0.01 to 5 kg of active substance per hectare, preferably from 0.1 to 3 kg per hectare.

4,609,754

PROCESS FOR THE PRODUCTION OF ISOSOLANONE AND SOLANONE, INTERMEDIATES USEFUL IN SAID PROCESS AND ORGANOLEPTIC USES OF SAID INTERMEDIATES

John B. Hall, Rumson; James M. Sanders, Eatontown, and James N. Siano, Keyport, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

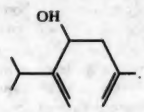
Division of Ser. No. 542,477, Oct. 17, 1983, Pat. No. 4,476,147, which is a division of Ser. No. 380,542, May 20, 1982, Pat. No. 4,433,695. This application Jun. 22, 1984, Ser. No. 609,348

Int. Cl.[4] C07C *69/72*

U.S. Cl. 560—178 **3 Claims**

GLC PROFILE FOR EXAMPLE I.

1. The compound having the structure:



4,609,755

SYNTHESIS OF VINYL ESTERS

David Farrar, West Yorkshire, England, assignor to Allied Colloids Limited, England

Continuation-in-part of Ser. No. 543,734, Oct. 20, 1983. This application Apr. 15, 1985, Ser. No. 723,012

Claims priority, application United Kingdom, Apr. 25, 1984, 8410497

Int. Cl.[4] C07C *67/02*

U.S. Cl. 560—217 10 Claims

1. A process in which a compound R^3COOR^4 is made by ester interchange with a compound R^3COOR^1 in the presence of an alcoholate derived from an alcohol R^4OH and optionally in the presence also of the alcohol R^4OH, wherein R^1 is C_{1-3} alkyl, R^3 is $CH_2{=}CH-$ or $CH_2{=}C(CH_3)$ and R^4 is selected from alkyl having at least 4 carbon atoms, cycloalkyl having at least 4 carbon atoms and aminoalkyl, characterised in that the alcoholate is present as a solution in the reaction mixture and has the empirical formula

$$[M^1(OR^4)_{2-a}R_a^7]_x[M^2(OR^4)_{n-b}R_b^7]_y \qquad I$$

wherein

M^1 is selected from Mg, Ca and Ba

M^2 is selected from Ti, Zr and Al

n is 3 or 4 and is the valency of M^2

a is a number from 0 to 1.5

b is a number from 0 to 0.75n

$x+y=1$ and each is a number from 0.005 to 0.995 and is such that the compound is liquid at 30° C.

R^4 is as defined above and

each group R^7 is individually selected from (a) C_{1-3} alkoxy groups and (b) C_{8-30} alkyl or alkoxy blocking groups that are substantially less reactive in the ester interchange reaction than the groups OR^4.

4,609,756

PROCESS FOR THE PREPARATION OF OPTIONALLY SUBSTITUTED CINNAMIC ACID IN THE PRESENCE OF A CATALYST

Alfons Dorlars, Leverkusen; Heinz U. Blank, Odenthal; Herbert Nordt, deceased, late of Leverkusen (by Hildegard Nordt, heiress), and Viktor Trescher, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 4, 1985, Ser. No. 784,283

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1984, 3437634

Int. Cl.[4] C07L *63/64*

U.S. Cl. 562—495 11 Claims

1. In the preparation of a cinnamic acid by reacting the corresponding benzaldehyde with ketene in the presence of a catalyst, the improvement which comprises using as the catalyst an iron and/or zinc salt of a mono- or di-carboxylic acid with 2 to 20 carbon atoms containing free carboxylic acid and/or anhydride, and then splitting the reaction product in the temperature range from 100° to 250° C. with an acid or basic catalyst.

4,609,757

HYDRAZIDES OF AMINO-POLYACETIC ACIDS AS CHELANTS

Thomas F. D'Muhala, and Robert C. Ward, both of Lebanon, Conn., assignors to Nuclear Technology Corporation, Amston, Conn.

Filed Aug. 10, 1983, Ser. No. 522,068

Int. Cl.[4] C07C *109/08*

U.S. Cl. 564—151 13 Claims

1. A process for producing a hydrazide of an amino-polyacetic acid which comprises reacting the amino-polyacetic acid with less than the stoichiometric amount of a lower alkanol for esterification and with a stoichiometric excess of hydrazine.

4,609,758

PHENOXYETHYLAMINE DERIVATIVES

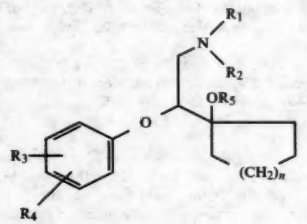
George E. M. Husbands, Berwyn, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed May 9, 1985, Ser. No. 732,478

Int. Cl.[4] C07C *93/06, 103/26*

U.S. Cl. 564—348 16 Claims

1. A compound of the formula:



in which

R_1 is hydrogen or alkyl of 1 to 6 carbon atoms;

R_2 is alkyl of 1 to 6 carbon atoms;

R_3 and R_4 are independently hydrogen, hydroxyl, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkanoyloxy of 2 to 7 carbon atoms, halo or trifluoromethyl;

R_5 is hydrogen, alkyl of 1 to 6 carbon atoms or alkanoyl of 2 to 7 carbon atoms;

and n is one of the integers 0, 1, 2 or 3;

or a pharmaceutically acceptable salt thereof.

4,609,759

PROCESS FOR PREPARING AMINO-2, 4-DINITROAROMATIC HERBICIDES

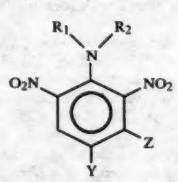
Richard V. C. Carr, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 2, 1984, Ser. No. 606,323

Int. Cl.[4] C07C *85/02*

U.S. Cl. 564—395 11 Claims

1. In a process for the preparation of 2,6-dinitroaniline compositions represented by the formula



wherein

Y represents halogen, alkyl C_1–C_4, alkenyl C_2–C_4, CF_3, CN or $-SO_2NR_3R_4$;

Z represents alkyl C_1–C_4; alkenyl C_2–C_4 or mono-sub-

stituted alkyl C_1–C_4 where the substituent is halogen, hydroxyl C_1–C_4 alkoxy or $—NR_3R_4$;

R_1 represents hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl or alkynyl C_2–C_6;

R^2 represents alkyl C_{1-7} (straight branched or cyclic), alkenyl C_{2-6}, alkynyl C_{2-6}, or mono-substituted alkyl C_{1-4} where the substituent is halogen or alkyl C_{1-4} or combined with R_1 to represent piperidino, pyrrolidino, or morpholino; and

R_3 and R_4 each rerpresent hydrogen or C_1–C_4 alkyl and where R_1 and R_2 when taken together represent piperidino, pyrrolidino, or morpholino, wherein a 2,6-dinitroaromatic compound having a labile group in the 1 position is reacted with a primary or secondary amine represented by the formula NHR_1R_2, with R_1 and R_2 being defined as above, the improvement comprising utilizing a 2,6-dinitro aromatic compound having a labile nitro group in the 1-position as said 2,6-dinitroaromatic compound.

4,609,760

PROCESS FOR THE PREPARATION OF 2,6-XYLIDINE

Siegfried Böhm, Dormagen; Helmut LeBlanc, Waldbroel, and Karlfried Wedemeyer, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 4, 1981, Ser. No. 270,663

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1980, 3023487; Mar. 14, 1981, 3109986

Int. Cl.[4] C07C *85/06*

U.S. Cl. 564—402 **14 Claims**

1. A process for the preparation of 2,6-xylidine by contacting 2,6-dimethylphenol with ammonia in the vapor phase in the presence of an aluminum oxide catalyst, the improvement which comprises carrying out the amination at a temperature from 360° to 460° C. at a minimum molar ratio of ammonia to 2,6-dimethylphenol which corresponds to the general formula

$$X = e^{\left(\frac{Y-B}{M}\right)}$$

wherein

X represents the minimum molar ratio of ammonia to 2,6-dimethylphenol,

Y represents the pressure in bars at which the reaction is conducted, it being at least 70 bars and

e represents the natural logarithm.

M and B are constants, with M=—39.2826 and B=262.809.

4,609,761

CONTINUOUS PREPARATION OF LINEAR POLYETHYLENEPOLYAMINES USING NOVEL CATALYSTS DERIVED FROM TITANIA AND A TRIALKYL PHOSPHATE OR PHOSPHITE

Lewis W. Watts, Jr., Austin, and Steven H. Vanderpool, New Braunfels, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 455,155, Jan. 3, 1983. This application Apr. 16, 1985, Ser. No. 723,973

The portion of the term of this patent subsequent to Mar. 25, 2003, has been disclaimed.

Int. Cl.[4] C07C *85/06*

U.S. Cl. 564—479 **10 Claims**

1. In a method wherein monoethanolamine is reacted with ethylenediamine in the presence of a phosphorous containing catalyst to provide an essentially noncyclic product comprising polyethylenepolyamines, the improvement for conducting said process on a continuous basis which comprises:

a. using, as a catalyst, thermally activated pelleted titania having from about 0.5 wt. % to about 10 wt. % of phosphorous derived from a trialkyl phosphate or a trialkyl phosphite thermally, chemically bonded, thereto,

b. continuously contacting a mixture of ethylenediamine and monoethanolamine in the molar ratio of about 1 to 5 moles of ethylenediamine per mole of monoethanolamine with said pelleted catalyst at a temperature of about 250° to about 400° C. and a pressure of about 500 to about 3000 psig. to obtain an essentially noncyclic reaction product.

4,609,762

THIOETHERS HAVING A HIGH SULFUR CONTENT AND METHOD THEREFOR

Lester Morris, Encino; Hakam Singh, Arcadia, and Jonathan D. Zook, North Hollywood, all of Calif., assignors to Products Research & Chemical Corp., Glendale, Calif.

Filed Jan. 30, 1984, Ser. No. 575,263

Int. Cl.[4] C07C *148/00*

U.S. Cl. 568—38 **36 Claims**

1. A liquid polythioether containing no oxygen in the polymeric backbone which is non-crystallizing and water and fuel resistant having the following formula:

$$(H)_f(R'')_a[S—R'—S—(CH(R_1)—CH(R_2)—S—(R—S)_p—CH(R_3)—CH(R_4)—R')_{n/m}—SH]_m$$

wherein each of R_2 and R_3 is hydrogen or lower alkyl, each of R_1 and R_4 is lower alkyl, R is lower alkylene or lower alkyl thioether, p is 0 to 3, n is from about 8 to 200, r is 0 or 1, a is 0 or 1, m is 1, 3 or 4, the sum of a and r being 1, when m is 1, r is 1 and when m is 3 or 4, a is 1, R′ is an organic divalent radical having no chemically reactive groups of an organic primary dimercaptan having the formula $R'—(SH)_2$, each mercaptan group being primary and R″ is a tri- or tetravalent organic fragment having no chemically reactive groups of the organic compound having the formula $R''—(Z)_q$ wherein Z is a secondary hydroxyl located beta to a sulfur atom or a primary mercaptan group and q is 3 or 4.

4,609,763

PROCESS FOR THE OXIDATION OF HYDROCARBONS

Colin G. Griggs, Ashford, and Anthony R. Middleton, Staines, both of England, assignors to The British Petroleum Company P.L.C., London, England

Filed Sep. 3, 1985, Ser. No. 771,987

Claims priority, application United Kingdom, Sep. 5, 1984, 8422443

Int. Cl.[4] C07C *45/30*

U.S. Cl. 568—342 **8 Claims**

1. A process for the production of an alcohol, ketone or mixture thereof by oxidation of a corresponding alkane or alkene having from 3 to 20 carbon atoms which process comprises reacting the alkane or the alkene in the liquid phase at a temperature in the range ambient temperature to 140° C. with a hydrocarbyl hydroperoxide and an effective amount of a soluble ruthenium catalyst,

wherein the reaction is carried out in the presence of hydrobromic acid or hydrogen bromide.

4,609,764

PROCESS FOR CONVERTING INACTIVE-TYPE STEREOISOMERS IN SYNTHESIZED SERRICORNIN INTO ACTIVE-TYPE STEROISOMER

Mori Masataka; Chuman Tatsuji; Kato Kunio, all of Yokohama, and Ono Mikio, Hamura, all of Japan, assignors to The Japan Tobacco & Salt Public Corporation and Fuji Flavor Company, Limited, both of, Japan

Filed Dec. 26, 1984, Ser. No. 686,255
Claims priority, application Japan, Dec. 27, 1983, 58-244663
Int. Cl.[4] C07C *45/79*
U.S. Cl. 568—384 17 Claims

1. Process of treating the synthesized compound 4,6-dimethyl-7-hydroxy-nonan-3-one, which is an equilibrium mixture of stereoisomers including three inactive-type stereoisomers having no sex pheromone activity on the cigarette beetle and an active-type stereoisomer having said sex pheromone activity, for converting said inactive-type stereoisomers to said active-type stereoisomer, which comprises the steps of:

(a) fractionating said compound by column chromatography using a column material capable of retaining said stereoisomers thereon, and thereafter successively a series of three solvent mixtures containing a first solvent and a second solvent, capable of removing from the column the stereoisomers so retained by the column material, and in which the ratio of the second solvent to the first solvent in the solvent mixture is selectively increased successively, and sufficient for thereby selectively producing three successive column fractions including

(a-1) a first fraction containing a first said inactive-type stereoisomer and capable of undergoing racemization to form an equilibrium mixture of stereoisomers containing said active-type stereoisomer,

(a-2) a second fraction containing said active-type stereoisomer and a second said inactive-type stereoisomer and capable of undergoing epimerization to form an equilibrium mixture of stereoisomers containing said active-type stereoisomer, and

(a-3) a third fraction containing a third said inactive-type stereoisomer and capable of undergoing racemization to form an equilibrium mixture of stereoisomers containing said active-type stereoisomer and also capable of undergoing epimerization to form an equilibrium mixture of stereoisomers containing said active-type stereoisomer,

(b) subjecting the first fraction to said racemization, the second fraction to said epimerization and the third fraction to one of said racemization or said epimerization, thereby to form the corresponding said equilibrium mixture of stereoisomers each containing said active-type stereoisomer, and

(c) fractionating each said equilibrium mixture obtained in step (b) by column chromatography according to step (a) using successively a series of said solvent mixtures in successively selectively increased ratios of said second solvent to said first solvent, and sufficient for thereby selectively producing in each case corresponding successive fractions including an active-type stereoisomer rich fraction.

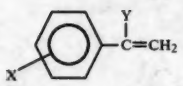
4,609,765

PROCESS FOR OXIDIZING VINYLBENZENE COMPOUNDS TO β-PHENYLALDEHYDES

Carlo Neri, and Franco Buonomo, both of S.Donato Milanese, Italy, assignors to Anic, S.p.A., Palermo, Italy

Filed Jul. 14, 1983, Ser. No. 513,804
Claims priority, application Italy, Jul. 28, 1982, 22610 A/82
Int. Cl.[4] C07C *45/27*
U.S. Cl. 568—430 12 Claims

1. A process for oxidizing vinylbenzene compounds having the formula:



wherein X is H, CH_3 or $—OCH_3$; Y is H or CH_3 to beta-phenylaldehydes wherein said compounds are reacted with aqueous hydrogen peroxide at at temperature of 20°–150° C. in the presence of a catalyst which consists essentially of titanium silicalite that contains titanium and silicon wherein the ratio of titanium, taken as the oxide, to silicon, taken as the oxide is defined by the formula:

$$xTiO_2(1-x)SiO_2$$

wherin x is between 0.0001 and 0.04.

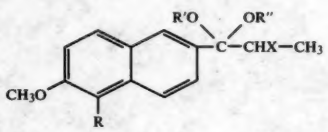
4,609,766

PROCESS FOR PREPARING ESTERS OF 2-(6'-METHOXY-2'-NAPHTYL)-PROPIONIC ACID VIA REARRANGEMENT OF NEW KETALS OF 2-HALO-1-(6'-METHOXY-2'-NAPHTYL)-PROPAN-1-ONE AND NEW ESTERS OF 2-(5'-BROMO-6'-METHOXY-2'-NAPHTYL)PROPIONIC ACID THUS PREPARED

Claudio Giordano, Monza; Aldo Belli, Novara; Fulvio Uggeri, Codogno, and Giovanni Villa, Monticello Brianza, all of Italy, assignors to Blaschim S.p.A., Milan, Italy

Division of Ser. No. 520,190, Aug. 4, 1983, Pat. No. 4,560,777, which is a division of Ser. No. 236,513, Feb. 20, 1981, Pat. No. 4,415,405. This application May 17, 1985, Ser. No. 735,166
Claims priority, application Italy, Feb. 26, 1980, 20187 A/80
Int. Cl.[4] C07C *43/30*
U.S. Cl. 568—592 4 Claims

1. A compound having the formula:



wherein

R is a hydrogen or a bromine atom;

R' is an alkyl radical having from 1 to 6 carbon atoms

R'' is an alkyl radical having from 1 to 6 carbon atoms, and

X is a halogen atom.

2. 2-bromo-1,1-dimethoxy-1-(6'-methoxy-2'-naphthyl)-propane.

3. 2-chloro-1,1-dimethoxy-1-(6'-methoxy-2'-naphthyl)-propane.

4. 2-bromo-1,1-diethoxy-1-(6'-methoxy-2'-naphthyl)-propane.

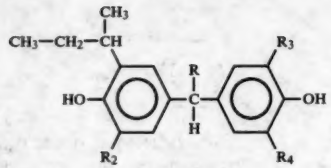
4,609,767

UNSYMMETRICAL ALKYLATED DIPHENOLIC COMPOUNDS

Kju H. Shin, and Edward F. Tatum, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 598,058, Apr. 9, 1984, Pat. No. 4,554,389. This application Sep. 12, 1985, Ser. No. 775,233
Int. Cl.[4] C07C *39/12*
U.S. Cl. 568—722 10 Claims

1. A para-para bridged diorthoalkyl phenolic compound having the following structure:



wherein R is H, or alkyl or alkenyl of 1 to 7 carbon atoms, cycloaliphatic of 3 to 7 carbon atoms, aromatic of 6 to 10 carbon atoms, a 5 to 7 member heterocyclic ring, or a heteroatomic radical of 1 to 7 atoms other than H; and wherein

R_2 is methyl, ethyl, isopropyl, or sec-butyl; and

R_3 and R_4 are independently selected methyl, ethyl, or isopropyl.

4,609,768

PROCESS FOR SYNTHESIS OF ETHYLENE GLYCOL FROM SYNTHESIS GAS PLUS 1,3-DIOXOLANE USING 1,3-DIOXOLANE AS A SOLVENT

John F. Knifton, Austin; Jiang-Jen Lin, Round Rock, and Neal J. Grice, Austin, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 22, 1984, Ser. No. 663,602

Int. Cl.[4] C07C *29/00, 31/20*

U.S. Cl. 568—866 **10 Claims**

1. A process for making ethylene glycol comprising reacting synthesis gas, a mixture of carbon monoxide and hydrogen, plus 1,3-dioxolane in the presence of a liquid catalyst consisting essentially of an effective amount of cobalt-containing compound and a silane-containing promoter, dispersed in a dioxolane solvent at a temperature of at least 50° C. and a pressure of at least 500 psi.

4,609,769

OLEFIN CONVERSION

Simon Kukes, and Robert L. Banks, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 15, 1984, Ser. No. 580,402

Int. Cl.[3] C07C *6/00*

U.S. Cl. 585—646 **8 Claims**

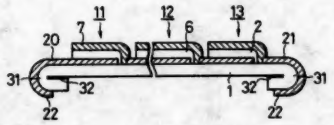
1. A process for disproportionating and isomerizing olefins comprising contacting at least one feed olefin having at least three carbon atoms per molecule under suitable reaction conditions which convert the feed olefin into other olefins having different numbers of carbon atoms with a catalytically effective amount of a catalyst composition consisting essentially of silica and tungsten oxide promoted with an effective promoting amount of a titaniferous agent.

4,609,770

THIN-FILM SOLAR CELL ARRAY

Masaharu Nishiura, and Osamu Nabeta, both of Kanagawa, Japan, assignors to Fuji Electric Corporate Research & Development Ltd., Kanagawa, Japan

Filed Oct. 11, 1984, Ser. No. 660,607
Claims priority, application Japan, Dec. 8, 1983, 58-231796
Int. Cl.[4] H01L *27/08, 27/14*
U.S. Cl. 136—244 8 Claims



1. In a thin-film solar cell array comprising a plurality of unit cell elements each having a first electrode, a thin semiconductor film, and a transparent second electrode deposited successively on an obverse surface of a flexible insulating substrate, said elements being electrically connected in series by a second electrode which overlaps the first electrode of an adjacent element, and a terminal electrode formed on said obverse surface of the substrate and connected to the second electrode of an element at an extreme end of said obverse surface, the improvement wherein on the opposite surface of said substrate there are provided at least two terminal electrodes made of metal layers deposited on said substrate and which are respectively connected electrically to the first electrode of an element at the other extreme end of said obverse surface of the substrate and to said terminal electrode on said obverse surface, all said electrodes providing current paths for solar cell power through said cell elements.

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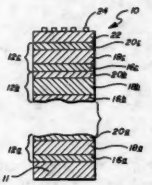
TANDEM JUNCTION SOLAR CELL DEVICES INCORPORATING IMPROVED MICROCRYSTALLINE P-DOPED SEMICONDUCTOR ALLOY MATERIAL

Subhendu Guha, Clawson, and James Kulman, Detroit, both of Mich., assignors to Sovonics Solar Systems, Troy, Mich.

Continuation-in-part of Ser. No. 667,659, Nov. 2, 1984. This application Feb. 13, 1985, Ser. No. 701,320
The portion of the term of this patent subsequent to Jul. 15, 2003, has been disclaimed.
Int. Cl.[4] H01L *31/06*
U.S. Cl. 136—249 19 Claims



1. A tandem photovoltaic structure comprising:

a. a plurality of n stacked solar cells, where n is an integer greater than 1;

b. each cell including a plurality of layers of amorphous semiconductor alloy material in optical and electrical series relationship;

said plurality of layers of each cell including therein oppositely doped layers establishing therebetween an electric field region for the collection of electron-hole pairs generated therein, wherein light impinging on said structure passes sequentially through said doped layers and said electric field regions with a portion of the light being absorbed in each of said electric field regions; and

said plurality of layers including a p-doped amorphous silicon alloy layer, the improvement comprising in combination:

said p-doped amorphous silicon layer being microcrystalline in that said p-doped layer is characterized by a volume fraction of crystalline inclusions greater than a threshold value at which substantial changes in electrical parameters including conductivity and activation energy occur; said volume fraction being greater than about 16–19% in a 3-D model and about 45% in a 2-D model; and

said p-doped microcrystalline layer exhibiting low optical absorption, low activation energy, high electrical conductivity and having an optical gap wider than the optical gap of the corresponding amorphous silicon alloy material.

2. A structure as in claim 1, wherein all of the doped layers are microcrystalline.

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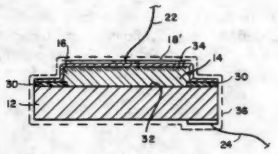
PHOTOVOLTAIC PRODUCTS AND PROCESSES

Kathy B. Grolitzer, Tarzana, Calif., assignor to Columbia Chase Corporation, Braintree, Mass.

Continuation-in-part of Ser. No. 526,695, Aug. 26, 1983, abandoned, which is a continuation-in-part of Ser. No. 372,154, Apr. 27, 1982, Pat. No. 4,410,758, which is a continuation-in-part of Ser. No. 234,492, Feb. 17, 1981, abandoned, which is a continuation-in-part of Ser. No. 122,259, Feb. 19, 1980, abandoned, which is a continuation-in-part of Ser. No. 25,224, Mar. 29, 1979, abandoned. This application Jun. 17, 1985, Ser. No. 745,670
Int. Cl.[4] H01L *31/04, 31/18*
U.S. Cl. 136—254 42 Claims



2. A photovoltaic cell which comprises:

(A) an electrically conductive substrate;

(B) a layer of cesium fluoride-like material on one surface of said substrate, said layer containing first and second portions, said first, lower portion adjacent said substrate being non-stoichiometric cesium fluoride-like material, and said second, upper portion being non-stoichiometric cesium fluoride-like material having a highly doped P+ doping, the transition between said first and second portions being graded with respect to said doping;

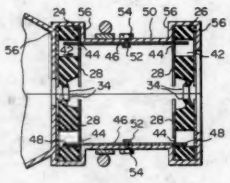
(C) an electrically conductive substantially transparent metallic layer over said upper portion of said cesium fluoride-like layer; and

(D) a morphology-stabilizing quantity of a Group VI A element, within said layer of said cesium fluoride-like material.

4,609,773
SEAL ASSEMBLY

Allan P. Brown, Ottawa, and Leonard J. Charlebois, Kanata, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jul. 8, 1985, Ser. No. 752,746
Int. Cl.[4] F16J *15/02;* **H02G** *15/113*
U.S. Cl. 174—92 **4 Claims**



1. A mold for providing an encapsulation around a cable comprising two mold halves each of which, in an unassembled condition of the mold, is a pre-formed sub-assembly, and each sub-assembly in said mold unassembled condition comprising:

(a) a housing which defines a part of a mold cavity and has two ends with the mold cavity part between the two ends, each end of the housing defining two axially spaced semi-circular inwardly opening recesses, said housing comprising a longitudinally sectioned half of a tubular wall having longitudinal edges to abut with the opposing longitudinal edges of the housing of the other half, each recess formed by a first wall extending radially outwardly of the respective housing end, a second wall extending axially outwardly from said first wall, and a third wall extending radially inwardly from said second wall;

(b) a semi-circular sealing member received within each recess at each end of the housing; and

(c) each end of the housing comprising an elongate holding means secured to the housing, the holding means extending between and mechanically holding the two associated semi-circular sealing members within their recess; and

(d) each semi-circular sealing member including an oriface spaced from the longitudinal edges of the housing for receiving an end of the holding means, the holding means comprising a flat strip, a fastener element through an aperture in said strip and the tubular wall half to fasten the holding means in place; and

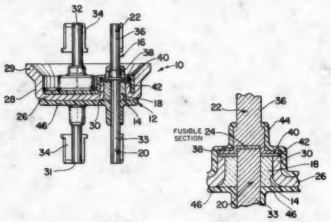
upon assembly together of the mold half sub-assemblies, the mold cavity is defined between housings with each semi-circular sealing member of one mold half coacting with a semi-circular sealing member of the other mold half to form a complete seal.

4,609,774
ELECTRICAL TERMINAL CONSTRUCTION WITH FUSIBLE SECTION

David M. LeMieux, Coventry; John A. Dodenhoff, deceased, late of Cranston (Maxine S. Dodenhoff, executor), and by Ralph Papitto, executor, Hope, all of R.I., assignors to B & W Electronic Enclosures, Inc., Pawtucket, R.I.

Filed Jun. 18, 1985, Ser. No. 746,254
Int. Cl.[4] H01B *17/30;* **H01R** *13/68, 13/74*
U.S. Cl. 174—152 GM **13 Claims**

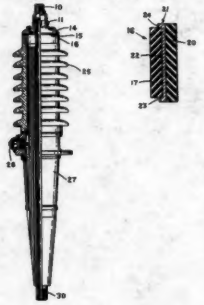
1. In a terminal construction comprising a body having inner and outer sides and having an end wall with at least one aperture therethrough, a pin made of an electrically conductive material extending through said aperture in said end wall and extending a distance beyond said end wall on both sides thereof, said pin having inner and outer ends, the inner end of said pin being disposed on the inner side of said body, the outer end of said pin being disposed on the outer side of said body, a seal bonding said pin to said end wall, the improvement comprising said pin comprising first and second pin sections and an electrically conductive fusible section, said seal being bonded to said first pin section, said fusible section being disposed on the inner side of said body and interconnecting said first and second pin sections in substantially aligned relation at a point in the extent of said pin which is not bonded to said seal, said first and second pin sections being made of materials having melting points which are greater than the melting point of the material from which said seal is constructed, said fusible section being constructed and being made of a material having a melting point which is sufficiently less than the softening point of the material from which said seal is constructed so that when said pin is heated by the passage of current therethrough, said fusible section is melted to permit the separation of said first and second pin sections before said seal material is heated by said pin to its softening temperature.



4,609,775
BUSHING INCLUDING AN EXPANSION COMPENSATION SEAL

John H. Moran, Stafford, N.Y., assignor to Interpace Corporation, Purchase, N.Y.

Continuation-in-part of Ser. No. 387,823, Jun. 14, 1982, abandoned. This application Jul. 31, 1984, Ser. No. 636,370
Int. Cl.[4] H01B *17/30;* **F16J** *15/12*
U.S. Cl. 174—152 R **6 Claims**



4. In a high voltage insulator bushing for service in excess of about 69 kV and having axially aligned members arranged for containing insulating oil; a seal providing a joint between first and second axially adjacent ones of said members and comprising:

a rigid annular spacer of substantially constant wall thickness and having a flat base portion including first and second surfaces and radially inner and outer circumferentially continuous flanges upstanding from the first surface of the base portion and forming a trough therebetween;

a first non-metallic resilient annular gasket seated in said trough and engaging said flanges and the first surface of the base portion; and

a second non-metallic resilient annular gasket engaging the second surface of the base portion, and when unstressed

being coextensive with the second surface of the base portion,

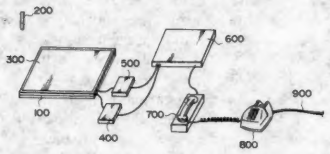
said seal being under axial compression applied by said first and second members to said first and second gaskets.

4,609,776

COORDINATE INPUT DEVICE WITH DISPLAY

Azuma Murakami, Tokyo; Yoshinori Taguchi, and Tsuguya Yamanami, both of Ageo, all of Japan, assignors to Wacom Co., Ltd., Japan

Filed Jan. 7, 1985, Ser. No. 689,353
Claims priority, application Japan, Jan. 13, 1984, 59-4479
Int. Cl.[4] G08C *21/00*
U.S. Cl. 178—18 5 Claims



1. A coordinate input device with display comprising:

a tablet having a plurality of X-direction magnetostrictive transmission mediums arranged in parallel, a plurality of Y-direction magnetostrictive transmission mediums arranged in parallel and superposed on said X-direction transmission mediums substantially orthogonally thereto, and first and second electromagnetic converters arranged over substantial regions of said magnetostrictive transmission mediums;

a tabular display superposed on said tablet and having a display area substantially equal to the position detection area on said tablet;

a position appointing magnetism generator capable of producing a magnetism just enough for causing a local increase of electro-mechanical coupling coefficient in said magnetostrictive transmission mediums in said tablet;

a position detecting circuit adapted to supply a pulse current to one of said first and second electromagnetic converters such as to generate magnetostrictive vibration wave in a reference position on each magnetostrictive transmission medium or a position appointed by said position appointing magnetism generator, said position detecting circuit being further adapted to measure the time duration between the moment at which said magnetostrictive vibration wave is generated and a moment at which said magnetostrictive vibration wave has reached the appointed position or said reference position, thereby detecting the coordinate values of the position appointed by said position appointing magnetism generator;

a display control circuit adapted for driving said display in such a manner that the position corresponding to said coordinate values is displayed on said display;

a signal modulating/demodulating circuit adapted for converting the position data expressed by said coordinate values into a signal suitable for transmission through a transmission line and vice versa; and

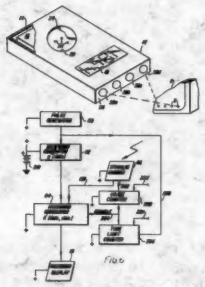
a processing circuit for controlling said position detecting circuit, said display control circuit and said modulating-/demodulating circuit.

4,609,777

SOLID STATE KEY FOR CONTROLLING ACCESS TO COMPUTER SOFTWARE

William P. Cargile, Half Moon Bay, Calif., assignor to Gordian Systems, Inc., Palo Alto, Calif.

Division of Ser. No. 582,302, Feb. 22, 1984. This application Dec. 23, 1985, Ser. No. 812,748
Int. Cl.[4] H04K *1/02*
U.S. Cl. 178—22.08 3 Claims



1. An access key for affording access by a user to a software program residing in a computer with the computer having a stimulus number generator and a video display capable of generating a signal representative of said stimulus number, said access key comprising:

(a) pulse generating means for generating a series of pulses that are dependent on the elapse of time;

(b) password generating means coupled to said pulse generating means for generating a password for one or more pulses from said pulse generating means;

(c) displaying means communicating with the password generating means for displaying at least part of said password;

(d) at least one sensor accessible from the exterior of said access key so that juxtaposition of the access key and the display affords excitation of the sensor by the signal;

(e) means coupled to said sensor for decoding the signal to produce the stimulus number;

(f) said password generating means including a baseword generating means communicating with said pulse generating means for producing a baseword that is a function of pulses produced by said pulse generating mean;

(g) said password generating means including a means for combining the stimulus number with the baseword to produce the password to afford a user access to a software program.

4,609,778

TRUNK CALL PROCESSING SERVICES FOR HOST COMPUTER INTERCONNECTIONS

Andrew D. Franklin, 3460 16th St., Boulder, Colo. 80302; John R. Lothrop, 3813 Columbia Dr., Longmont, Colo. 80501, and John D. Wiidakas, 11471 N. Elm Way, Thornton, Colo. 80233

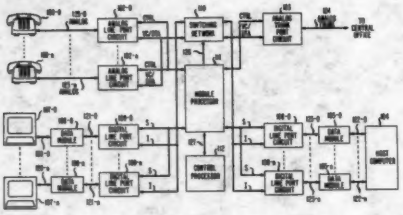
Filed Sep. 27, 1984, Ser. No. 654,886
Int. Cl.[4] H04M *11/00*
U.S. Cl. 179—2 DP 8 Claims

3. In a communication switching system controlled by a control processor serving trunk port circuits and line port circuits having associated station equipment wherein said port circuits connect to said control processor by a communication channel, a call process interlinking arrangement in said control processor for providing service features associated with trunk port circuits for connections involving line port circuits comprising:

a first means responsive to a first set of signals generated over said communication channel from any one of said

line port circuits to said control processor for establishing a call connection between said one line port circuit and a second one of said line port circuits;

a second means responsive to a second set of signals generated over said communication channel from any one of said trunk port circuits to said control processor for establishing a call connection between said one trunk port circuit and at least one other port circuit; and



bridging means responsive to a combination of said first set of signals from said one line port circuit and said second set of signals also from said one line port circuit for interconnecting said first means to said second means to provide service features associated with trunk port circuits when said call connection is between line port circuits.

4,609,779

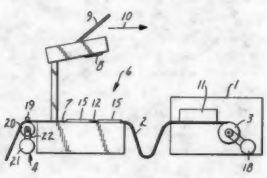
TELECONFERENCING GRAPHICS APPARATUS AND SYSTEM

Bruce J. Rogers, Fridley, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 13, 1984, Ser. No. 620,322

Int. Cl.[4] H04N *1/22*

U.S. Cl. 179—2 R **4 Claims**



1. Teleconferencing apparatus useful for providing teleconferencing graphics including:

a graphics copy output device for providing a transparent graphics copy output from a copy roll supply in response to electronic input signals received from a remote location;

an overhead transparency projector having a transparency receiving platen, said overhead transparency projector spaced from said graphics copy output device for allowing any transparent graphics copy output from said graphics copy output device to be stored prior to presentment of the transparent graphics copy output to said overhead transparency projector; and

a motor driven roll mechanism adapted for operation independent of the operation of said graphics copy output device for moving the transparent graphics copy output of said graphics copy output device over said transparency receiving platen.

4,609,780

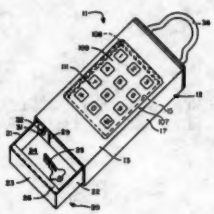
ELECTRONIC SECURE ENTRY SYSTEM, APPARATUS AND METHOD

Keith S. Clark, Sunnyvale, Calif., assignor to Azcorp Technology, Cupertino, Calif.

Continuation-in-part of Ser. No. 537,425, Sep. 29, 1983, abandoned. This application Oct. 16, 1984, Ser. No. 661,343

Int. Cl.[4] H04M *11/00*

U.S. Cl. 179—2 A **48 Claims**



1. In an apparatus for use in a secure entry system, a case, a compartment provided in said case and having access means movable between locked and access positions, a retainer receivable by said case and movable between latched and unlatched positions with respect to said case, first and second electromagnetic latch means carried within the case for use in operation of the access means of the compartment and the retainer respectively, a power supply in the case, circuitry within the case connecting the power supply to the first and second electromagnetic latch means, and code actuated means carried by the case and connected to the circuitry for selectively operating the first and second electromagnetic latch means.

4,609,781

BORSHT/SLIC AUTO BALANCING TECHNIQUE

Michael J. Gay, Coppet, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

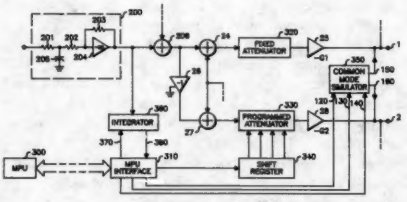
PCT No. PCT/GB84/00019, § 371 Date Sep. 27, 1984, § 102(e) Date Sep. 27, 1984, PCT Pub. No. WO84/03191, PCT Pub. Date Aug. 16, 1984

PCT Filed Jan. 25, 1984, Ser. No. 666,090

Claims priority, application United Kingdom, Feb. 1, 1983, 8302673

Int. Cl.[4] H04B *1/58, 3/03*

U.S. Cl. 179—16 AA **15 Claims**



1. A method for providing common mode signal rejection in a BORSHT/SLIC circuit having a transmit signal path coupling a pair of terminals of a two-wire subscriber line interface with a transmit terminal of a four-wire interface and a pair of signal paths coupling a receive terminal of the four-wire interface with the pair of terminals, the pair of signal paths having predetermined gains associated therewith, the method including the steps of:

periodically switching an applied current from one to the

other of the pair of terminals of the two-wire subscriber line interface;

detecting a common mode signal induced on the transmit signal path in response to said applied current being switched at the pair of terminals; and

adjusting the gain of at least one of the pair of signal paths in response to said detected common mode signal thereby reducing the magnitude of the common mode signal which otherwise is induced in said transmit signal path.

4,609,782

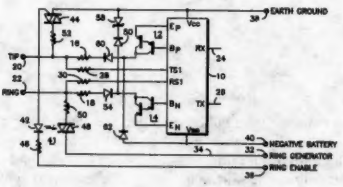
SOLID STATE SIGNAL INSERTION CIRCUIT AND METHOD FOR USE IN A TELEPHONY SYSTEM OR THE LIKE

Leland T. Brown, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 27, 1983, Ser. No. 565,951

Int. Cl.⁴ H04M *3/02*

U.S. Cl. 179—18 HB **3 Claims**



1. A circuit for inserting an alternating current (ac) signal onto a transmission path that is connected between a pair of terminals, comprising:

an auto-coupler device including a light emitting diode that is rendered conductive in response to an enabling signal applied to the circuit and a triac device optically coupled to said light emitting diode which is rendered conductive by said light emitting diode being rendered conductive for directly inserting the ac signal onto the transmission path at a first one of the pair of terminals, said triac device having a first electrode coupled to said first one of the pair of terminals and a second electrode to which the ac signal is applied; and

solid state switch means coupled in series with said light emitting diode including a second triac device having a control electrode coupled to said light emitting diode, a first electrode coupled to the second one of the pair of terminals and a second electrode coupled to a third terminal at which is supplied ground reference.

4,609,783

AUTOMATIC TELEPHONE ANSWERING APPARATUS

Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan

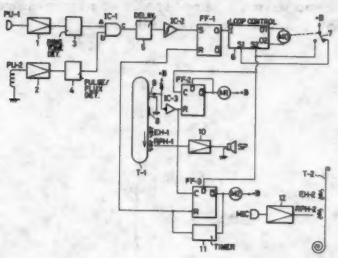
Filed Dec. 21, 1984, Ser. No. 684,916

Claims priority, application Japan, Dec. 24, 1983, 58-251686

Int. Cl.⁴ H04M *1/65*

U.S. Cl. 179—84 A **5 Claims**

1. An automatic telephone answering apparatus comprising: ringing tone detecting means for detecting a ringing tone when an incoming call is received; pulse detecting means for detecting a pulse or flux generated upon the incoming call; an AND gate for receiving outputs from said ringing tone detecting means and said pulse detecting means; and means for establishing a loop circuit of a telephone line in response to an output from said AND gate.



4,609,784

LOUDSPEAKER WITH MOTIONAL FEEDBACK

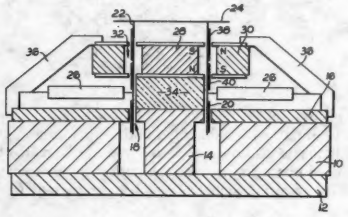
William Miller, West Lothian, Great Britain, assignor to Linn Products Ltd., Glasgow, United Kingdom

Filed Jul. 23, 1984, Ser. No. 633,201

Claims priority, application United Kingdom, Aug. 12, 1983, 8321810

Int. Cl.⁴ H04R *9/00, 3/08, 9/02, 9/06*

U.S. Cl. 179—115.5 DV **5 Claims**



1. A loudspeaker comprising a diaphragm and a drive assembly connected to drive the diaphragm in accordance with an input signal; the drive assembly comprising means for producing a primary magnetic field, a main coil positioned in said primary magnetic field and connected to receive the input signal, mechanical coupling means interconnecting the main coil and the diaphragm; and a transducer mounted in the drive assembly to produce a feedback signal which is a function of the motion of said mechanical coupling means, said transducer comprising means for establishing a secondary magnetic field and a pair of coils positioned within the secondary magnetic field for electrical connection in anti-phase.

4,609,785

UNIVERSAL HANDSET MOUNT

Tye C. Drinkard, Forest, and Arthur E. Douglas, Lynchburg, both of Va., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 29, 1985, Ser. No. 727,736

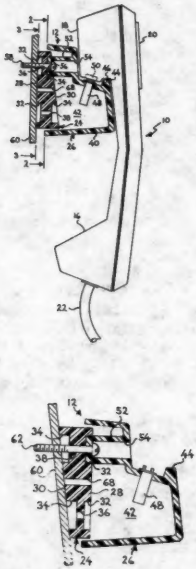
Int. Cl.⁴ H04M *1/04;* F16M *13/00*

U.S. Cl. 179—146 R **14 Claims**

1. An improved arrangement for mounting a telephone handset in a plurality of orientations comprising: a mounting plate having four sides, a base generally perpendicular to said sides, and an inclined face, said base having four sockets arranged in a generally square pattern, the axes of which are generally perpendicular to said base, and said inclined face

having four sockets arranged back-to-back with said base sockets and having common axes;

a handset hanger adapted to be mounted on said mounting plate and having a pair of spaced-apart bosses sized to be received in two sockets of said inclined face to provide a



first orientation of said hanger with respect to said mounting plate and also to be received in multiple pairs of sockets of said base to, provide four other orientations; and

means for securing said handset hanger to said mounting plate.

4,609,786

BAND AND THE HEADPHONE UTILIZING THE SAME

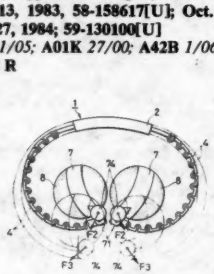
Hideo Omoto, and Takao Nakaya, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 12, 1984, Ser. No. 660,132

Claims priority, application Japan, Oct. 13, 1983, 58-158616[U]; Oct. 13, 1983, 58-158617[U]; Oct. 13, 1983, 58-158618[U]; Aug. 27, 1984; 59-130100[U]

Int. Cl.[4] **H04M** *1/05;* **A01K** *27/00;* **A42B** *1/06;* **A44C** *5/08*

U.S. Cl. 179—156 R **20 Claims**



1. a headphone comprising an arcuate top band member having two ends, a pair of side band members each connected to an end of said top band member and comprising a plurality of beam portions and arcuate hinge portions integrally interconnecting the adjacent beam portions so that said beam portions and arcuate hinge portions are alternately arranged, and headphone units pivoted rotatably inward respectively to the free ends of said pair of side band members, said hinge portions having returning forces to obtain fitting forces symmetrical with respect to said top band member which act to wind and curve said side band members.

4,609,787

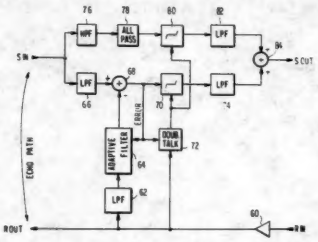
ECHO CANCELLER WITH EXTENDED FREQUENCY RANGE

Otakar A. Horna, Bethesda, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed May 21, 1984, Ser. No. 612,159

Int. Cl.[4] **H04B** *3/20*

U.S. Cl. 179—170.2 **14 Claims**



1. An extended range echo canceller, for cancelling a wide frequency echo of a receive signal created across an echo path and coupled into a send line adapted to carry a near end signal, a composite signal of said near end signal and said wide frequency echo in said send line being a send signal, comprising:

means responsive to said receive signal for generating a predicted echo signal representing a predicted low frequency echo of said wide frequency echo created across said echo path by said receive signal;

means for dividing said send signal into a low frequency send signal and a high frequency send signal;

means for subtracting the predicted low frequency echo from the low frequency send signal;

means for combining an output of said subtractor means with the high frequency send signal to form a send output signal;

means for suppressing low level components of said high frequency send signal and for suppressing low level components of said output of said subtracting means, said low level components of said output of said subtracting means being suppressed more than high level components; and

means for disabling said suppressing means when the level of the output of said subtracting means exceeds the level of said receive signal by a predetermined amount.

4,609,788

DIGITAL VOICE TRANSMISSION HAVING IMPROVED ECHO SUPPRESSION

William J. Miller, N. Miami, and Chun C. Lu, Miami, both of Fla., assignors to Racal Data Communications Inc., Miami, Fla.

Filed Mar. 1, 1983, Ser. No. 471,138

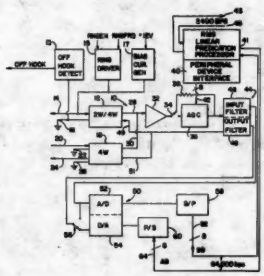
Int. Cl.[4] **H04B** *3/20*

U.S. Cl. 179—170.6 **2 Claims**

1. A digital communication apparatus for transmitting and receiving a compressed digital representation of speech produced by a near talker and a far talker respectively, said compressed digital representation of speech including a coded gain parameter related to speech energy, said apparatus comprising:

transmission gain detection means for reading the gain parameter of said near talker's compressed digital representation of speech;

receiver gain detection means for reading the gain parameter of said far talker's compressed digital representation of speech;



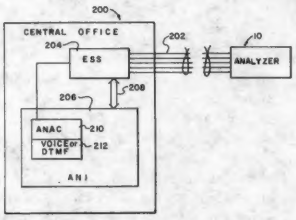
means for detection which of said near talker and far talker gain parameters has a lesser value, and for reducing the gain parameter detected to have the lesser value.

4,609,789

VERIFICATION VIA CABLE ANALYZER

Jimmy C. Ray, and H. Wayne Mathews, both of Denison, Tex., assignors to Communications Technology Corporation, Los Angeles, Calif.

Filed Mar. 4, 1985, Ser. No. 707,858
Int. Cl.[4] H04M *3/28*
U.S. Cl. 179—175.2 D **7 Claims**



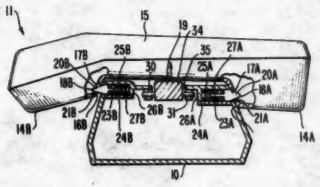
1. The process involving a telephone system including
a. a plurality of line pairs,
b. some of the line pairs having telephone numbers, said line pairs in
c. a field with
d. a central office having
e. automatic number identification equipment with,
f. an automatic number announcement converter,
g. which equipment operates to announce to a line from the field the telephone number of that line in response to a coded message request received on said line;
h. wherein the improved method comprises:
i. said automatic number announcement converter responding to the coded message request with a code inquiry, and
j. upon the prompt receipt of a machine request in response,
k. announcing the telephone number in rapid digital machine readable code.

4,609,790

LOCKING APPARATUS FOR TELEPHONE

Ryoichi Kaiwa, Yokohama, and Yuichiro Suganuma, Yokosuka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 27, 1984, Ser. No. 655,097
Int. Cl.[4] H04M *1/06, 1/02, 1/04*
U.S. Cl. 179—189 R **7 Claims**



1. A telephone with a locking means for locking a handset thereof to a base unit thereof, comprising:
the handset having a receiver part projecting from one end and having an outer end, a transmitter part projecting from the other end in the same direction as said receiver part and having an outer end and having a side face thereon opposed to a corresponding side face on said receiver part with said opposed faces of said receiver and transmitter parts having groove-shaped recesses therein with outer edges;
the base unit having side faces with upper portions and over which said handset fits with said opposed faces adjacent said upper portions of said side faces of said base unit;
engaging members mounted in said base unit adjacent the upper portion thereof and resiliently slidable into and out of said base unit and normally urged outwardly of said base unit and having outer ends for engaging in said recesses when said handset is positioned on said base unit, said outer ends of said engaging members having a shape for being urged inwardly of said base unit, when engaged by the outer end of said transmitter part and the outer end of said receiver part as said handset is moving toward said base unit, for allowing said recesses to pass said outer ends of said engaging members and allowing said engaging members to snap resiliently back into said grooved-shaped recesses, and for, when engaged by the outer edges of the respective recesses as said handset is moving away from said base unit, being urged inwardly of said base unit for allowing the receiver part and the transmitter part to move past said engaging members; and
means on said base for being actuated for exerting a removing force on said handset for moving said handset to cause said outer edges of said recesses to force said engaging members into said base unit.

4,609,791

FLEXIBLE DIAPHRAGM KEYPAD AND METHOD OF MANUFACTURE

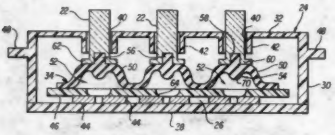
Jean-Pierre Abbat, Raleigh, N.C., assignor to ITT Corporation, New York, N.Y.

Filed Dec. 20, 1984, Ser. No. 683,892
Int. Cl.[4] H01H *13/14*
U.S. Cl. 200—5 A **9 Claims**

1. A keypad comprising:
an array of buttons;
a grid having apertures for locating said buttons;
a conductive elastomeric diaphragm disposed beneath said grid and connecting with each of said buttons;
a circuit board disposed on a side of said diaphragm opposite said grid;
an insulating layer positioned between said circuit board and said diaphragm, said insulating layer having cavities at

locations beneath sites of said buttons, said circuit board having a set of electrical conductors which are insulated except at locations beneath sites of said buttons wherein said conductors are exposed partially by said cavities to form terminals; and wherein

said diaphragm comprises a set of domes opening towards said terminals, there being one dome for each of said



buttons, the top of each dome facing a corresponding one of said buttons, each dome having a substantially spherically shaped contact region for closing an electrical circuit between terminals of said board upon compression of the dome by a displacement of the corresponding button, each cavity being formed for receiving a corresponding spherically shaped contact region.

4,609,792

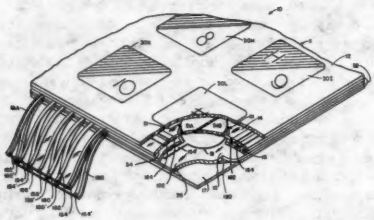
ENCODING KEYBOARD

Joseph L. Levasseur, St. Louis, Mo., assignor to Coin Acceptors, Inc., St. Louis, Mo.

Filed Mar. 20, 1985, Ser. No. 713,833

Int. Cl.⁴ H01H *13/70*

U.S. Cl. 200—5 A **24 Claims**



1. An encoding keyboard construction comprising an input connection, a plurality N of output connections, where N is an integer, a plurality of first contact sites, a plurality of second contact sites, each of said second contact sites being associated with a respective first contact site to define a contact site pair, each contact site pair including three electrodes, each contact site including at most two electrodes, a first set of conductors each of which conductors is connected to a single selected electrode at each of one or more selected contact sites of said first contact sites, a second set of conductors each of which is connected to a single selected electrode at each of one or more selected contact sites of said second contact sites, at least one of said conductors being connected to said input connection for receiving a common input signal and the remainder of said conductors being connected to said plurality of output connections, means biasing said first contact sites apart from said second contact sites, one of said electrodes of each contact site pair being operatively connected to said input connection, the other two electrodes of each contact site pair being operatively connected to two distinct output connections which define a pair of output connections associated with such contact site pair, said pair of output connections associated with each contact site pair being unique to such contact site pair, said contact sites that define each contact site pair being adapted to be moved into contact with one another, the establishment of contact between the contact sites that define each contact site pair effecting application of the common input signal to the unique pair of output connections associated with such contact site pair and thereby effecting production at said plurality of output connections of an encoded 2-of-N multi-bit output signal uniquely representative of such contact site pair.

2. The encoding keyboard construction of claim **1** including first and second sheet-like members each having a first face, said plurality of first contact sites disposed on said first face of said first sheet-like member, said plurality of second contact sites disposed on said first face of said second sheet-like member, said contact sites on said second sheet-like member being spaced thereon to be in alignment with said contact sites on said first sheet-like member when said first faces of said sheet-like members are positioned in face-to-face relationship.

16. The encoding keyboard construction of claim **2** wherein tne number of contact site pairs is equal to Y and $Y \leqq N!/[(N-2)!2!]$.

4,609,793

ELECTRICAL SLIDE SWITCHING DEVICE

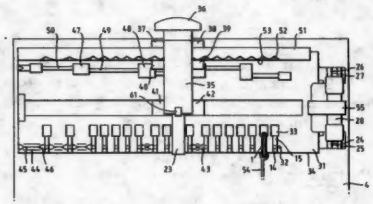
Henri Kristanek, and Pierre Dégrange, both of Annecy, France, assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 10, 1984, Ser. No. 679,803

Claims priority, application France, Dec. 13, 1983, 83 19931

Int. Cl.⁴ H01H *15/00*

U.S. Cl. 200—16 D **2 Claims**



1. An electrical switching device comprising, in combination:

a printed circuit board having a longitudinally extending slide rack thereon;

a plurality of generally U-shaped fixed contacts mounted to said printed circuit board perpendicularly of said slide rack and on one side thereof;

a carrier device slidably mounted in said slide rack for longitudinal movement therein, said carrier slide having an operating button extending perpendicularly away from said slide rack on the other side thereof;

a flexible movable contact mounted on said carrier device for engaging selected ones of said fixed contacts in response to the longitudinal movement of said carrier device;

a plurality of secondary contacts fixedly mounted to said printed circuit board perpendicularly of said slide rack on said other side thereof, said secondary contacts respectively engaging said movable contact when said movable contact engages a selected one of said fixed contacts;

a longitudinally extending stop position rack mounted parallel to and spaced apart from said slide rack on said other side thereof, said position rack having a plurality of recesses along its longitudinal direction respectively corresponding to said selected ones of said fixed contacts; and,

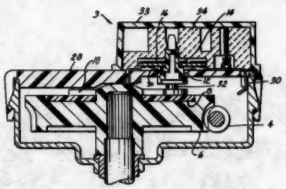
a detent member mounted on said carrier device and being resiliently urged toward and engaging said recesses along said stop position rack.

4,609,794

PRINTED CIRCUIT SWITCH FOR WINDSHIELD WIPER MOTOR

David L. Porter, Westland, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 30, 1985, Ser. No. 771,100
Int. Cl.[4] H01H 3/42, 19/20
U.S. Cl. 200—24 10 Claims



10. A switch for a windshield wiper motor comprising:

a first, a second and a third blade terminal switching contact equally spaced about a circumference and each contact having an end portion thereby defining three points of a plane;

a generally planar, circular printed circuit board aligned with said plane and rotationally moveable with respect to said switching contacts and including first, second and third conduction elements disposed on a first side of said printed circuit board for selectively contacting said switching contacts in response to relative rotation between said switching contacts and said printed circuit board means;

said first conduction element having an angled configuration which can be rotationally positioned to contact two of said first, second and third switching contacts;

said second conduction element having an angled configuration which can be rotationally positioned to contact two of said first, second and third switching contacts;

said third conduction element extending around the periphery of said first side of said printed circuit board and including portions which can be rotationally positioned to contact each of said first, second and third switching contacts and including plural tab means for extending around the edge of said printed circuit board means to a second side of said printed circuit board means, opposite from said first side, so as to provide electrically connected regions on both said first and second sides of said printed circuit board means;

an electrically conductive resilient biasing spring coupled to said second side of said printed circuit board means for biasing said printed circuit board means against said switching contacts, to prevent undesired rotational movement and to provide electrical contact between said biasing spring and said tab means;

a shaft means coupled to said printed circuit board means for causing rotation of said printed circuit board means;

said biasing spring having a central aperture for passing said shaft means therethrough;

said shaft means and said printed circuit board having coupling means for coupling rotation of said shaft means to said printed circuit board;

said shaft means having a main member generally coaxial with said printed circuit board and a radially offset cam follower; and

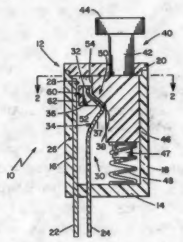
a cam coupled to the windshield wiper motor and engaging said cam follower so that movement and position of said cam follower is responsive to the movement of the windshield wiper motor and causes said printed circuit board to be rotated into one of three positions associated with forward operation of the windshield wiper motor, reverse operation of the windshield wiper motor, and parking of the windshield wiper motor.

4,609,795

VIBRATION PROTECTED SWITCH

Vernon W. Lavigne, Rolling Meadows; Keith A. Rosborough, LaGrange, and Frederick L. Lau, Skokie, all of Ill., assignors to Switchcraft, Inc., Chicago, Ill.

Filed Sep. 12, 1984, Ser. No. 649,649
Int. Cl.[4] H01H 3/12
U.S. Cl. 200—61.19 5 Claims



1. An electrical switch comprising:

first and second electrical contact means moveable into predetermined electrical contacting relationship with one another for actuated closing of the switch and moveable into spaced apart relationship with one another for actuated opening of the switch; and

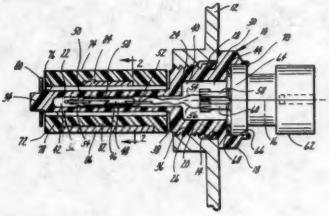
dielectric barrier means supported for insertion between said first and second electrical contact means subsequent to said contact means being spaced apart a distance greater than the interposed dimension of the dielectric barrier means in said actuated opening of the switch and for removal from between said first and second electrical contact means prior to said contact means being spaced apart a distance equal to the interposed dimension of the dielectric barrier means in said actuated closing of the switch.

4,609,796

LIQUID LEVEL SENSING SWITCH

Rudolph Bergsma, Ann Arbor, Mich., assignor to Hi-Stat Michigan Manufacturing Co., Inc., Ann Arbor, Mich.

Filed May 8, 1985, Ser. No. 732,206
Int. Cl.[4] H01H 35/18
U.S. Cl. 200—84 C 23 Claims



1. A liquid level sensing switch which fits into a threaded aperture in a sidewall of a liquid container for providing a signal related to level of liquid in the container, said sensing switch comprising a main body structure which has a main axis and a coaxial screw thread via which said sensing switch coaxially screws into the threaded aperture of the container to result in the main axis of the main body structure being disposed in a substantially horizontal orientation when the sensing switch is fitted into the threaded aperture of the container, said main body structure forming a closure for the threaded aperture so that liquid in the container will not leak out through the aper-

ture when the sensing switch has been fitted into the aperture, said main body structure further comprising an axially extending body portion which is disposed within the container when the sensing switch has been fitted into the aperture and a reed switch on said body portion disposed generally parallel therewith, means for connecting said reed switch to an external electrical circuit, said body portion comprising means defining a circular, cylindrical ofter surface which extends parallel with said main axis, a buoyant float which has its own main axis and is disposed on said body portion generally parallel with the main axis of said main body structure, said float comprising a float body of a material which is buoyant in the liquid whose level is to be sensed, said float comprising means defining a circular, cylindrical inner surface which extends around and is of a larger diameter than said circular, cylindrical outer surface defined on said body portion, said float and said main body structure being constructed and arranged such that said float is free to assume its own circumferential orientation independently of the circumferential orientation of said body portion, and means disposed on said float body to constrain the float to a single stable circumferential orientation on said body portion irrespective of the circumferential orientation of said body portion, said last-mentioned means comprising weighting means comprising a magnet disposed on said float body without rendering the float non-buoyant in the liquid whose level is to be sensed such that the force of gravity acting on the float creates a unique circumferential orientation of the float irrespective of the circumferential orientation of said body portion whereby the magnet is disposed for operation within a predetermined range of positions in accordance with liquid level to act upon said reed switch in a predetermined manner correlated with liquid level.

4,609,797

SPLITTER PLATE

John S. Morton, Wilmslow, and James F. Parkinson, Rochdale, both of Great Britain, assignors to Whipp & Bourne Limited, Rochdale, England

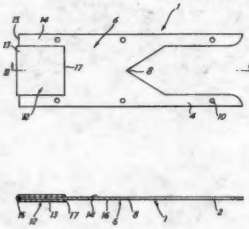
PCT No. PCT/GB84/00018, § 371 Date Sep. 26, 1984, § 102(e) Date Sep. 26, 1984, PCT Pub. No. WO84/03004, PCT Pub. Date Aug. 2, 1984

PCT Filed Jan. 23, 1984, Ser. No. 662,414

Claims priority, application United Kingdom, Jan. 31, 1983, 8302615

Int. Cl.⁴ H01H *33/08*

U.S. Cl. 200—144 R **5 Claims**



1. An arc splitter plate having a pair of spaced parallel limbs merging into a block poriton, the block portion including at an end region thereof, remote from the pair of spaced paralled limbs, an insulating means, said insulating means being a tape of flexible material adhering to a surface of the block portion, said tape including combined layers of insulating material and adhesive.

4,609,798

MEANS FOR ASSEMBLING TWO ENCLOSURES OF AN ELECTRICAL CUTOUT APPARATUS

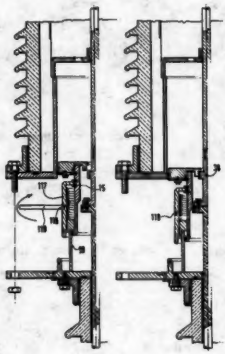
Dante Nicoloso, Jonage, France, assignor to Alsthom, Paris Cedex, France

Filed Jul. 23, 1985, Ser. No. 758,003

Claims priority, application France, Jul. 27, 1984, 84 12012

Int. Cl.⁴ H01H *33/54*

U.S. Cl. 200—148 R **5 Claims**



1. Means for assembling together two communicating enclosures of an electrical cutout apparatus filled with a dielectric fluid under pressure and traversed by a control rod for actuating the cutout means, which assembling means comprises, in view of separating said two enclosures, an intermediate, slidable sealing air lock and two vertically spaced apart sealing rings on a boss and a flange respectively of said control rod, operable to simultaneously seal one enclosure on one side of the air lock and the other enclosure on the other side of the air lock, said air lock comprising two separable portions which when separated respectively become fast with one and the other enclosures, the part of said control rod within said air lock having two cooperating circular flanges separable for separating said rod into first and second sections which are fast with respective portions of said enclosures, said air lock consisting of a cylindrical space formed between the end of said first section of the rod and the inside of a hollow piston and being bounded on one side by said seal-fitted boss on said first rod section cooperating with a first portion of said piston and on the other side by said seal-fitted flange on said second section of the rod cooperating with the second portion of said piston, said first enclosure having at its lower end a first assembly plate for mounting on a second assembly plate on the upper end of said second enclosure, said first plate comprising a cylindrical sleeve against the inside of which is arranged a slide block attached to said second plate and also carrying a sealing ring, said first portion or head of said piston being slidably arranged and fitted with a seal within said cylindrical sleeve and said second or outwardly directed bottom flange portion of said piston being slidably arranged and fitted with sealing means within said slide block, wherein said assembling means is provided an internally threaded sleeve screwably cooperating with a thread on a portion of the outside surface of said slide block and is further provided with means for making said threaded sleeve and said piston slidably fast.

4,609,799

CIRCUIT INTERRUPTER

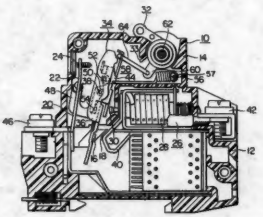
Hirotoshi Ohishi, Fukuyama; Hiroshi Fujii, Asakuchi, and Hiroaki Fujihisa, Fukuyama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 7, 1985, Ser. No. 689,435

Claims priority, application Japan, Jan. 13, 1984, 59-5070; Jan. 13, 1984, 59-5071; Jan. 19, 1984, 59-8333; Jan. 19, 1984, 59-8334

Int. Cl.[4] H01H *9/20*

U.S. Cl. 200—153 G **7 Claims**



1. A circuit interrupter comprising:

a pair of separable contacts, at least one of which is movable;

an operating handle for manually operating said interrupter; and

an operating mechanism operatively connected to move said movable contact relative to the other contact for opening and closing said circuit interrupter, said operating mechanism including:

a movable contact arm carrying said movable contact at one end and providing a latch surface at the other end,

a latch member pivotally mounted on said movable contact arm and having a latching end spaced from said latch surface to form a jaw therebetween, and

a toggle link mechanism connected to said operating handle and having a portion adapted to be received in and held by engagement with the spaced latching end and latch surface forming said jaw to form a connection with said latch member to operate said movable contact arm to manually open and close said contacts of said interrupter, said portion of said toggle link means being released from said jaw by coaction with said latch surface upon movement of said latching end of said latch member away from said latch surface to open said jaw caused by said operating mechanism to trip said interrupter.

4,609,800

MICROWAVE OVEN DOOR STRUCTURE

Yasuhiro Sakoda, Wakayama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 8, 1985, Ser. No. 731,723

Claims priority, application Japan, Jun. 15, 1984, 59-89598[U]

Int. Cl.[4] H05B *6/64*

U.S. Cl. 219—10.55 D **2 Claims**

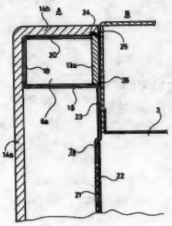
1. A microwave oven door structure for closing the opening of an oven chamber which comprises

a door wall defining a door cavity, said door wall having an internal slit for preventing microwave leakage to the environment,

a plurality of integrally assembled, bent-shaped side walls defining a choke cavity disposed within said door cavity, one of the side walls of said choke cavity positioned adjacent said internal slit,

a choke cover provided with a projecting element, said choke cover closing said choke cavity with the projecting element thereof extending into said internal slit,

a metal contact element extending from one of the side walls of said choke cavity and held in contact with part of a peripheral edge of the opening of the oven, and



a punching portion securely covering the front surface of the opening of the oven.

4,609,801

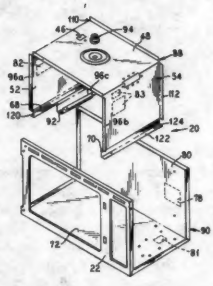
CAVITY CONSTRUCTION FOR MICROWAVE OVEN

Donald J. Spencer, Pleasant Township, Franklin County, and Leonard O. Larsen, Marion Township, Marion County, both of Ohio, assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jul. 8, 1985, Ser. No. 752,818

Int. Cl.[4] H05B *6/64*

U.S. Cl. 219—10.55 R **21 Claims**



1. A microwave oven cooking cavity and cabinet construction comprising:

a first U-shaped sheet metal member folded to form a front panel, bottom panel and rear panel of said oven cabinet as well as a bottom panel and rear panel of said cooking cavity;

said first member having an opening through said front panel portion forming a front opening for said cooking cavity;

a door member secured to said cabinet to selectively seal said front opening of said cooking cavity;

a second U-shaped sheet metal member nestable within said first member and folded to form a top panel and opposed side panels of said cooking cavity;

said second member top panel having a width less than a width of said first member bottom panel to provide a space laterally adjacent said cooking cavity in said cabinet to accommodate electrical components;

said second member having a flange formed along the entire peripheral edge thereof to lie flat against an adjacent portion of said first member;

fastening means for joining a portion of said second member flange to said front cabinet panel around the periphery of said cooking cavity opening resulting in metal-to-metal contact between said members while leaving a front face of said front panel unmarked; and

fastening means for joining the remainder of said second

member flange to adjacent cabinet panels resulting in metal-to-metal contact between said members;

whereby said cooking cavity is comprised of said two U-shaped members and being accessible through said front opening.

4,609,802

WIRE-LATTICE WELDING MACHINE

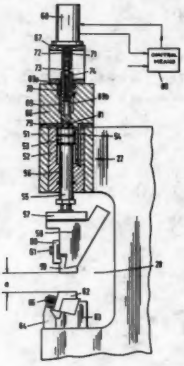
Thomas Sotonyi, Isernhagen; Heinz Webers, Meerbusch, and Erich Elle, Korschenbroich, all of Fed. Rep. of Germany, assignors to Baustahlgewebe GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Nov. 30, 1984, Ser. No. 676,566

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1983, 3343763

Int. Cl.[4] B23K *37/00*

U.S. Cl. 219—56 **5 Claims**



1. An apparatus for welding wire lattice, which comprises a plurality of adjacent welding units and means for mounting said units for lateral movement relative to one another, each of said welding units having an upper electrode, a lower electrode and drive means for longitudinal displacement of said upper electrode, said drive means including adjustable stop means for automatically limiting the displacement of the upper electrode to a retracted resting position according to the thickness of the wire lattice and degree of electrode wear for each welding unit, so that the upper electrode of each welding unit travels the same distance during the working stroke from said retracted resting position to the point of contact with the wire lattice, each of said welding units including motor means for axial displacement of the adjustable stop means, and control means for actuating the motor means and displacement of said stop means.

4,609,803

TW-EDM METHOD AND APPARATUS WITH A FERROMAGNETIC WIRE ELECTRODE

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Kanagawaken, Japan

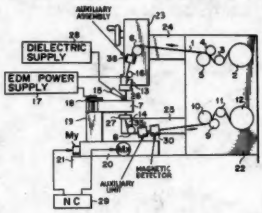
Filed May 17, 1984, Ser. No. 611,406

Claims priority, application Japan, May 17, 1983, 58-85110; Jul. 14, 1983, 58-129192; Jul. 18, 1983, 58-131643; Aug. 17, 1983, 58-149226

Int. Cl.[4] B23H *7/04*

U.S. Cl. 219—69 W **17 Claims**

1. A method of machining an electrically conductive workpiece in which a thin, elongate continuous electrode is axially transported from supply means to travel through a machining zone in the workpiece and to be collected into takeup means and a succession of electrical discharges are effected between the traveling electrode and the workpiece across a machining gap in the presence of a flushing liquid medium to electroerosively remove material from the workpiece while the traveling electrode and the workpiece are relatively displaced transversely to the electrode along a programmed path to advance erosive material removal therealong and in which the elec-



trode is ferromagnetic at least downstream of the machining zone in its path of travel, the method comprising the step of:

sensing a magnetic property of said traveling electrode downstream of said machining zone to produce an electrical signal representing a disturbance of said electrical discharges from a normal mode in said machining zone.

4,609,804

ARC WELDING APPARATUS

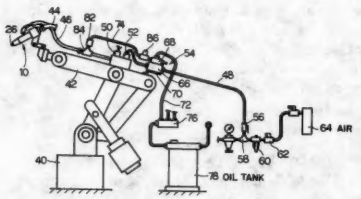
Tomomi Kishi, Toyota; Yoshiroh Awano, Nagoya, and Yasuhide Takao, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Aug. 10, 1984, Ser. No. 639,510

Claims priority, application Japan, Aug. 25, 1983, 58-155647

Int. Cl.[4] B23K *9/28, 35/38*

U.S. Cl. 219—74 **10 Claims**



1. An arc welding apparatus comprising

an arm;

a torch mounted on said arm, said torch including a gas nozzle and a welding electrode, a passage being defined between said gas nozzle and said welding electrode;

a first connecting pipe and a second connecting pipe;

a valve means which is in communication through said first connecting pipe with said passage between said gas nozzle and said welding electrode, said valve means functioning to selectively introduce either pressurized air or a shield gas into the first connecting pipe;

a tank; and

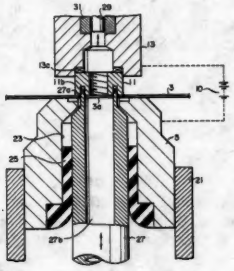
a pump which functions to introduce oil from said tank into said first connecting pipe through said second connecting pipe, said pump introducing oil when said valve means introduces said pressurized air into said first connecting pipe.

4,609,805

WELD NUT WELDING APPARATUS

Hideaki Tobita, Toyota, and Kazuo Naruse, Okazaki, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jul. 12, 1985, Ser. No. 754,160
Int. Cl.[4] B23K *11/00, 11/30*
U.S. Cl. 219—93 10 Claims



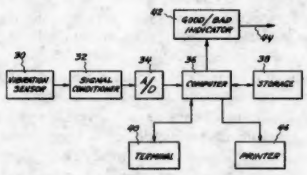
1. A weld nut welding apparatus comprising:
an upper electrode;
a lower electrode disposed such as to oppose said upper electrode;
a plate material placed on said lower electrode;
a weld nut placed such as to abut against said plate material at a welding position thereon, said weld nut having punch receiving means formed in the surface thereof which abuts against said plate material;
a welding power source for supplying a welding current to said plate material and said weld nut which are clamped between said upper and lower electrodes via said electrodes, said welding current being of such a magnitude as to cause said weld nut to be welded to said plate material; and
a punch adapted to move inside said lower electrode and toward said upper electrode such as to press said plate material into said punch receiving means, thereby punching a bore in said plate material, said bore corresponding to the shape of said punch receiving means.

4,609,806

METHOD AND APPARATUS FOR DETERMINING WELD QUALITY IN PERCUSSION WELDING

Stephen E. Grabkowski, Schenectady; Max W. Schulz, Jr., Scotia, both of N.Y., and Robert D. Williamson, Bloomington, Ill., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 23, 1985, Ser. No. 779,005
Int. Cl.[4] B23K *9/22*
U.S. Cl. 219—95 20 Claims



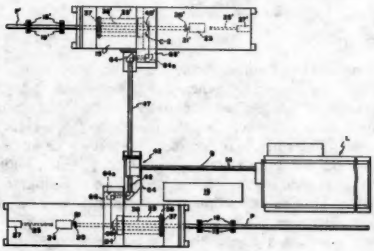
19. An apparatus for determining the quality of welds produced by a percussion welding machine including a movable forging member for forcing a first part into engagement with a second part in the presence of a welding arc to produce fusion of the first and second parts which comprises an accelerometer affixed to the forging member for measuring the vibration of the forging member during welding and for producing a corresponding impulse signal; means for measuring the damping characteristic of the weld process by measuring the time rate of change of an envelope of the impulse signal; means for comparing the measured damping characteristic with a preselected threshold value; and means for providing an output indication of a defective weld upon the measured damping characteristic being less than the threshold value.

4,609,807

APPARATUS AND METHODS FOR LASER SEVERING METAL TUBULAR STOCK

James P. Morrissy; William J. Hunter, both of Findlay, Ohio, and Herman E. Heidtman, Bay City, Mich., assignors to Midwest Laser Systems, Inc., Findlay, Ohio

Filed Dec. 28, 1984, Ser. No. 687,284
Int. Cl.[4] B23K *26/00, 26/06*
U.S. Cl. 219—121 LG 7 Claims

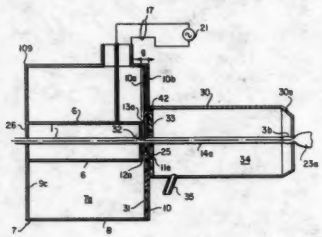


1. In a system for separating tubular metallic stock into discrete lengths: a frame; a pair of axially spaced hollow spindles supported horizontally thereon in generally parallel alignment; means on the frame longitudinally aligned with the spindles for horizontally supporting a pair of tubes such that they can be fed axially into position through said spindles to a work station for each tube; jaw means associated with said spindles for gripping said tubes; a laser unit disposed between said work stations for emitting a laser beam; a beam bender assembly comprising a hollow housing with an entrance opening in line with the said beam from the laser unit, and a pair of laterally opposite, side, beam exit openings, said housing containing a carriage mounting a pair of side-by-side carriage mirrors behind said entrance opening and generally broadside to it; guide means mounting said carriage for travel in a back and forth path, to dispose first one of the mirrors and then the other in line with the beam from the laser alternately, said carriage mirrors being tilted in opposite directions to reflect the beam out different exit openings to different work stations dependent upon which mirror is aligned with the entrance opening; carriage moving motor means for moving said carriage in a reciprocatory path to dispose said mirrors to positions alternately opposite the beam to direct the beam out the exit openings alternately toward each work station; motor mechanism for alternately continuously rotating said spindles in a severing path of rotation in correlation with the position of said carriage; each work station having a focusing head with a convergent axially extending nozzle each focusing head having a beam bender for receiving the beam from one of said carriage mirrors and directing the beam axially to the nozzle of each focusing head; and a telescopic lens assembly mounted in each focusing head for directing said beam axially out said nozzle at the rotating stock, and focusing it to remove material at the surface of the stock to separate the stock into discrete lengths.

4,609,808
PLASMA GENERATOR

Emile Bloyet; Philippe Leprince, both of Gif sur Yvette, and Jean Marec, Limours, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Paris, France

Continuation of Ser. No. 251,063, Apr. 6, 1981, Pat. No. 4,473,736. This application May 14, 1984, Ser. No. 609,585
Claims priority, application France, Apr. 10, 1980, 80 08073
Int. Cl.[4] B23K *9/00*
U.S. Cl. 219—121 PR **9 Claims**

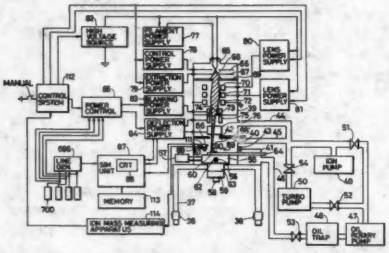


1. A method of producing a plasma comprising the steps of:
providing a generator for generating microwaves in a preselected range; establishing an essentially non-resonant coupling of microwave energy between the microwave generator and the conductive terminal portion of a pipe having an open end, said coupling including a non-resonant cavity within said preselected range independently of a load on said coupling, so that said open end radiates a portion of said microwave electromagnetic energy;
feeding gas to said pipe so that gas leaves the pipe through said open end; and
initiating a plasma formation at said open end of the pipe, whereby said microwave energy is then coupled to the plasma for sustaining the same and said portion of the microwave energy is no longer radiated.

4,609,809
METHOD AND APPARATUS FOR CORRECTING DELICATE WIRING OF IC DEVICE

Hiroshi Yamaguchi, Fujisawa; Akira Shimase, Yokohama; Tateoki Miyauchi, Yokoha, and Mikio Hongo, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 16, 1984, Ser. No. 590,344
Claims priority, application Japan, Mar. 16, 1983, 58-42126
Int. Cl.[4] B23K *15/00*
U.S. Cl. 219—121 EM **21 Claims**

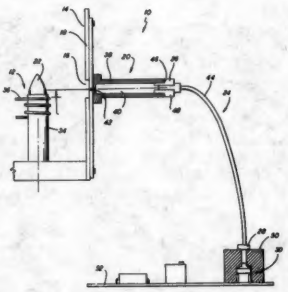


1. A method of correcting a device comprising:
extracting an ion beam from an ion source having a high brightness, such as provided by a liquid metal ion source or the like;
converging said ion beam to a fine spot by means of a charge particle optical system and a plurality of aligned apertures;
aligning said ion beam and locating a wiring portion formed outside an active layer region of a device by positioning said spot while observing a step surface portion of a passivation film on said wiring portion by means of a scanning ion microscope unit; and
radiating said ion beam on the passivation film portion on said wiring portion and on said wiring portion itself to remove sequentially said passivation film portion and said wiring portion by a sputtering process without causing damage of said active layer region of the device.

4,609,810
APPARATUS FOR CONTROLLING A PLASMA

Michael J. O'Brien, Bethel, and Gordon F. Wallace, Newtown, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jun. 25, 1984, Ser. No. 624,313
Int. Cl.[4] B23K *9/00*
U.S. Cl. 219—121 PT **7 Claims**



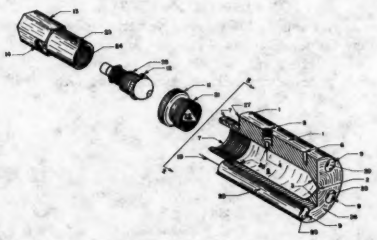
1. Apparatus for preventing damage to a plasma torch comprising:
a plasma torch which includes a quartz tube through which an inert gas flows and a helical RF coil disposed on the outside diameter of said quartz tube substantially at one end thereof;
said RF coil being energizable so as to ignite said inert gas emanating from said one end of said quartz tube, the ignited inert gas forming a plasma discharge;
light gathering means, directed at a predetermined volume above said RF coil, for gathering a portion of the light from the plasma discharge;
detector means, remote from said light gathering means, for producing a detector signal indicative of the light intensity of the plasma discharge;
light transmitting means, coupled between said light gathering means and said detector means, to transmit light from said light gathering means to said detector means;
reference signal means for supplying two reference signals comprising a static reference signal, having a predetermined value, and a dynamic reference signal proportional to the instantaneous power to said RF coil;
comparing means for comparing the detector signal with said two reference signals; and
de-energizing means to de-energize said RF coil whenever the detector signal is below either of said two reference signals.

4,609,811

ELECTRIC HEAT EXCHANGER

Timothy J. Danner, R.D. #1, Box 153-C, Seven Valleys, Pa. 17360

Filed Aug. 16, 1985, Ser. No. 766,244
Int. Cl.[4] H05B *3/00*
U.S. Cl. 219—302 10 Claims



1. An electric heat exchanger for vaporizing a fluid which is introduced into said heat exchanger by means of a by-pass nozzle system comprising:

a first machined element having formed as a part thereof a first zone (1), a second zone (8), and a third zone (7),

said first zone (1) comprising an elongated cylindrical metal element having a plurality of bores (9) formed in substantially the entire length of said first zone,

electric heating elements within said plurality of bores for heating said second zone;

air inlet orifice means (4) formed substantially perpendicular to the axis of said first zone cylindrical element and extending through said first zone to said second zone,

fluid inlet means for the introduction of fluid into said second zone;

said second zone (8) within said first zone and comprising an air and fluid mixing chamber having smooth walls (28), said mixing chamber being devoid of any internal heating elements,

said second zone including an angled exit portion (3) at a downstream location thereof and further including an exit orifice (2) downstream of said angled exit portion (3),

said third zone (7) comprising a reduced exterior diameter portion and an internal diameter portion which is an extension of the smooth wall diameter (28) of said second zone and upstream of said air and fluid mixing chamber,

the internal diameter of said third zone (7) including attachment means for affixing said first machined element to a by-pass nozzle adaptor (13) of a by-pass nozzle (12) system.

4,609,812

PRERECORDED DUAL STRIP DATA STORAGE CARD

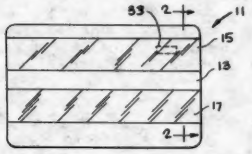
Jerome Drexler, Los Altos Hills, Calif., assignor to Drexler Technology Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 763,027, Aug. 6, 1985, which is a continuation-in-part of Ser. No. 673,573, Nov. 21, 1984, Pat. No. 4,542,288, which is a continuation-in-part of Ser. No. 566,966, Dec. 29, 1983, Pat. No. 4,500,777, which is a continuation-in-part of Ser. No. 492,691, May 11, 1983, abandoned, which is a continuation-in-part of Ser. No. 238,833, Feb. 27, 1981, abandoned. This application Sep. 10, 1985, Ser. No. 774,576
Int. Cl.[4] G06K *13/07*
U.S. Cl. 235—487 8 Claims

1. A data storage card for use with a card reader comprising,

a wallet-size card having opposed sides and a length equal to or exceeding a width,

a first strip of high resolution reflective read-only optical memory material adhered to the card, said first strip containing photolithographically prerecorded high and low reflectivity data areas representing data bits, the reflective contrast ratio between said high and low reflectivity data areas at least two to one, and



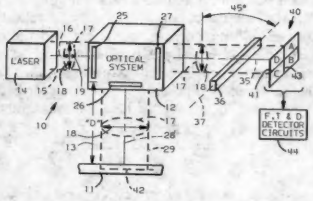
a second strip of magnetic recordable material adhered to the card.

4,609,813

OPTICAL SYSTEMS EMPLOYING OVATE LIGHT BEAMS

Donald K. Cohen, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 18, 1985, Ser. No. 713,208
Int. Cl.[4] G01T *1/20;* G11B *5/09*
U.S. Cl. 250—201 17 Claims



1. In an optical system, the improvement including, in combination:

a light source having an ovate-shaped output light beam with a major axis;

target means disposed to intercept the output light beam and modulating same in a manner to indicate degree of focus or out of focus at the target means interception of the output light beam;

a focus detector disposed to receive said output light beam modulated by said target means for detecting the focus at said target means interception; and

an astigmatic optical element having a first axis of astigmatism disposed at about 45 degrees with respect to said major axis and optically interposed between said focus detector and said target means.

4,609,814

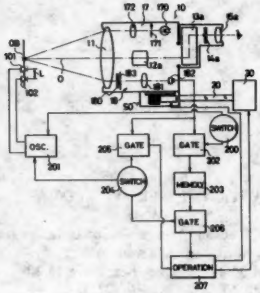
CONTROL FOR OPERATION MICROSCOPES

Kitajima Nobuaki; Nishimura Shinichi, and Takahashi Susumu, all of Tokyo, Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Japan

Filed Jun. 18, 1984, Ser. No. 621,505
Claims priority, application Japan, Jun. 20, 1983, 58-110726; Jun. 20, 1983, 58-110727
Int. Cl.[4] G01J *1/20;* G01B *11/00*
U.S. Cl. 250—201 10 Claims

1. An operation microscope system comprising operation microscope means including observation optical means having an observing optical axis and adapted for observing at least a portion of a patient wherein an operation is to be made, support means for supporting said microscope means and at least said portion of the patient for relative movement, driving means for

effecting a relative movement between said portion of the patient and said microscope means, mark means provided on one of said microscope means and said patient, mark detecting means provided on the other of the microscope means and said patient for receiving beams from said mark means to produce a position signal in accordance with a relative position between the mark means and the mark detecting means, memory means for memorizing an initial position signal as produced by said



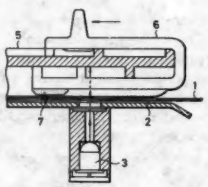
detecting means when an initial relative position is established between said portion of the patient and said microscope means, displacement detecting means for detecting a relative displacement between said portion of the patient and the microscope means based on said initial position signal and an actual position signal as produced by said mark detecting means to produce a displacement signal, adjusting means for actuating said driving means in accordance with said displacement signal to restore said initial relative position.

4,609,815

PAPER HOLE DETECTING APPARATUS WITH SLIDABLE REFLECTOR

Hiroshi Hishinuma; Masao Miyasaka; Kenji Okada, and Shuichi Morio, all of Ibaraki, Japan, assignors to Hitachi Koki Company, Limited, Tokyo, Japan

Filed Mar. 3, 1983, Ser. No. 471,610
Claims priority, application Japan, Mar. 5, 1982, 57-35427
Int. Cl.⁴ G01V *9/04*
U.S. Cl. 250—222.1 **7 Claims**



1. An apparatus for detecting a feeding of a paper (1, 8) having holes (2) along longitudinal margins thereof, comprising:

a light emitting element (3);

a light receiving element (4);

a non-reflecting element (5) located on a side of said paper opposite said light emitting element;

a reflector;

means for slidably mounting said reflector on said non-reflecting element;

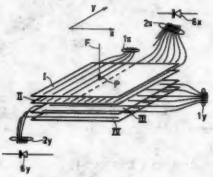
such that light emitted from said light emitting element which passes through one of said holes being substantially reflected toward said light receiving element by said reflector when said reflector is slid to a position which is opposite said light emitting element, said light being substantially not reflected toward said light receiving element by said non-reflecting element when said reflector is slid away from said position.

4,609,816

POSITION SENSOR HAVING AT LEAST TWO LAYERS OF LIGHT CONDUCTORS

Petrus J. W. Severin, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 6, 1984, Ser. No. 597,762
Claims priority, application Netherlands, Apr. 14, 1983, 8301298
Int. Cl.⁴ H01J *5/16*
U.S. Cl. 250—227 **6 Claims**



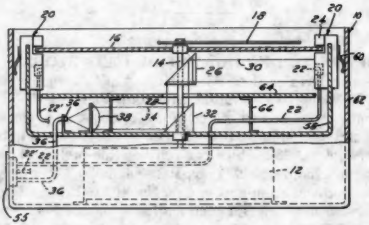
1. A position sensor for forming, using optical means, an electric signal which is dependent on the position of an end of a pointing member which bears on the position sensor, said position sensor comprises at least two layers of light conductors embedded in a light-conducting carrier material whose refractive index is lower than the refractive index of the light conductors, the light conductors in both layers extending parallel to one another, the spacing of the light conductors in each layer being at least a factor of five larger than the distance between two light conductors which are substantially oppositely situated in the two layers, the light conductors in a first layer being connected to a light source while the light conductors in a second layer are connected to a light detector.

4,609,817

OPTICAL SHAFT POSITION SENSOR

Alexander M. Mumzhiu, Oak Park, Mich., assignor to Mid-West Instrument - Div. Astra Associates, Inc., Troy, Mich.

Filed Apr. 7, 1983, Ser. No. 482,946
Int. Cl.⁴ G01D *5/34*
U.S. Cl. 250—231 SE **31 Claims**



1. An optical shaft position sensor comprising:

a rotatable shaft;

first light deflecting means for deflecting light between an axial path extending parallel to the shaft and a first path which extends radially from the shaft;

second light deflecting means mounted on the shaft for rotation therewith to deflect light between the axial path and a second path axially spaced from the first path and

extending radially from the shaft whereby said first and second light paths are optically coupled;

light receiving means for intercepting the light in one of the radial paths independent of the second light deflecting means to indicate shaft position; and

means for providing a source of light for the other radial path.

4,609,818

OPTO-ELECTRONIC SCANNING APPARATUS WITH ROTARY PLATE SCANNING ELEMENT

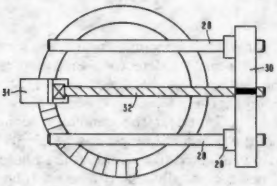
Eckart Lennemann, Herrenberg, and Werner Ruppert, Schönaich, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1983, Ser. No. 564,985

Claims priority, application European Pat. Off., Dec. 24, 1982, 821111984.9

Int. Cl.⁴ H01J *3/14*

U.S. Cl. 250—234 **5 Claims**



1. Opto-electronic image scanning apparatus comprising, a record carrier for retaining the image to be scanned, a plate,

means for rotating said plate in a plane parallel to said record carrier, and

a photosensitive scanning element positioned on said plate in a radial orientation relative to the axis of rotation of said plate whereby the image is scanned by said element.

4,609,819

SEALING ARRANGEMENT FOR ENCAPSULATED LENGTH OR ANGLE MEASURING SYSTEM

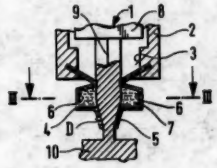
Walter Miller, Traunstein, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Oct. 31, 1984, Ser. No. 664,033

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1983, 3340863

Int. Cl.⁴ H01J *3/14*; B65D *53/00*

U.S. Cl. 250—237 G **4 Claims**



1. In an encapsulated measuring system for measuring the relative position of two objects movable relative to one another, of the type comprising a housing, adapted to be mounted to one of the two objects, which defines a slit extending in the measuring direction; a measuring component mounted for movement in the housing; and a coupling member coupled to the measuring component to extend out of the slit and adapted to be mounted to the other of the two objects, the improvement comprising:

means for covering the slit around the coupling member, said covering means comprising at least one thin, metal, resilient sheet shaped to seal against the coupling member in a sealing zone, said covering means defining a chamber in communication with the sealing zone, which chamber contains a sealing fluid operative to reduce friction and enhance sealing between the covering means and the coupling member.

4,609,820

OPTICAL SHIELD FOR IMAGE SENSING DEVICE

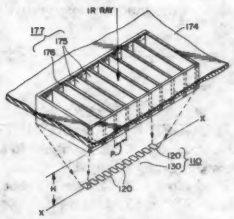
Yoshihiro Miyamoto, Atsugi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 4, 1984, Ser. No. 596,706

Claims priority, application Japan, Apr. 7, 1983, 58-61753; Apr. 7, 1983, 58-61754; Apr. 8, 1983, 58-62659

Int. Cl.⁴ G01J *1/00*

U.S. Cl. 250—338 **9 Claims**



1. An opto-electronic device comprising:

an array of infrared energy sensing elements arranged in at least one line;

a cold shield having a plurality of apertures which define a respective solid angle of field of view for each of said sensing elements;

said cold shield being supported in front of said array at a distance H from said array;

said apertures being separated by a plurality of partition walls;

said partition walls being arranged perpendicularly to the surface of said array and at least selected ones of said partition walls being arranged transversely to the line of said at least one line of sensing elements; and

said solid angle of the field of view of each of said sensing elements being defined to have a plurality of solid angle segments, by the geometry of said cold shield including the depth and the pitch of said apertures, and by said distance H between said sensing array and said cold shield, so as to provide effectively the same solid angle of the field of view for each said sensing element.

4,609,821

TESTING FOR THE PRESENCE OF NATIVE HYDROCARBONS DOWN A BOREHOLE

Charles F. Summers, Angus, Scotland, assignor to NL Industries, Inc., New York, N.Y.

Filed May 9, 1984, Ser. No. 608,762

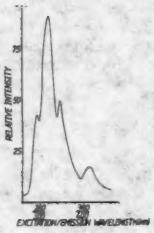
Claims priority, application United Kingdom, Jul. 6, 1983, 8318295; Apr. 19, 1984, 8410205

Int. Cl.⁴ G01V *5/00*

U.S. Cl. 250—255 **5 Claims**

1. A method of testing for the presence of native hydrocarbons down a borehole during drilling of the borehole using an oil-base drilling mud, comprising collecting a sample of rock cuttings brought up from the vicinity of the drill bit by the circulating mud flow, exciting the sample or a fluid prepared from the sample with electromagnetic radiation and sensing

the radiation emitted by the excited sample or sample preparation, such that the excitation and emission wavelengths of the sample or sample preparation are scanned a fixed wavelength



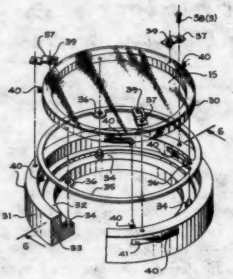
interval apart, monitoring the excitation and/or emission wavelengths against intensity, and determining whether the profile so obtained is characteristic of only the drilling mud or of a combination of the mud and native hydrocarbons.

4,609,822

RUGGED INTERFEROMETER

Aiden E. Roche, Palo Alto, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Nov. 5, 1984, Ser. No. 668,139
Int. Cl.[4] G01B *9/02*
U.S. Cl. 250—352 **15 Claims**



1. An interferometer for producing a series of spectrally narrow channels centered on a selected infrared wavelength, said interferometer comprising:

(a) a single-crystal substrate having a refractive index greater than 3.4, said substrate having first and second sides that are parallel to each other within a proper fraction of said selected wavelength;

(b) two dielectric stacks identified as the first stack and the second stack, each of said stacks comprising a plurality of layers made of different dielectric materials, said two dielectric stacks being substantially identical to each other, the layers of said first stack being coated one over another on the first side of said substrate, the layers of said second stack being coated one over another on the second side of said substrate, each of said dielectric stacks providing an internal reflectivity of greater than 90% for said substrate at said selected wavelength; and

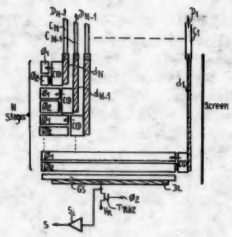
(c) means for mounting said substrate so as to be able to withstand thermal cycling between aabient terrestrial temperature and temperatures lower than 20° Kelvin.

4,609,823

CHARGE TRANSFER MULTI-LINEAR STRIP

Jean L. Berger, Grenoble, and Pierre Descure, Biziers, both of France, assignors to Thomson-CSF, Paris, France

Filed Nov. 2, 1984, Ser. No. 667,586
Claims priority, application France, Nov. 10, 1983, 83 17915
Int. Cl.[4] G01T *1/24*; H01L *31/00, 27/14*
U.S. Cl. 250—370 **13 Claims**



1. A charge transfer multi-linear strip comprising several lines of photosensitive detectors, each line receiving successively the radiation to be detected and comprising charge transfer shift registers which provide in phase summing of the information collected at the detectors occupying the same position in the different lines, and wherein:

said strip is adapted to radiology, the photosensitive detectors being photodiodes with a scintillator before these photodiodes and a screen being disposed to protect from the x-rays the whole strip, except the photodiodes and their connections;

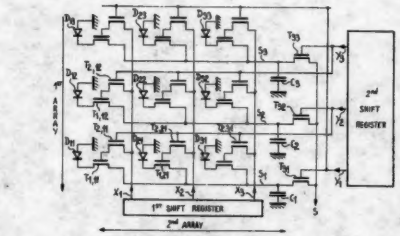
there is a device for charge injection of the information between each connection connected to a detector and an input of a charge transfer shift register, said device comprising especially a charge injection diode connected to one of the connections and a screen grid brought to a constant potential, said grid providing biasing of the detector.

4,609,824

PHOTOSENSITIVE DEVICE FOR THE INFRARED RANGE

Bernard Munier, Seyssinet Pariset, and Marc Arques, Grenoble, both of France, assignors to Thomson-CSF, Paris, France

Filed Nov. 9, 1984, Ser. No. 670,409
Claims priority, application France, Nov. 15, 1983, 83 18125
Int. Cl.[4] H01J *40/14*
U.S. Cl. 250—578 **4 Claims**



1. A photosensitive device for the infrared range comprising:

an array of N lines and M columns of infrared detectors integrated on a first semiconductor substrate and two electrode arrays, one of the arrays being assigned to the detectors of the same line and the other to the detectors of the same column;

a first MOS transistor connected between each detector and an electrode of the first array;

a first shift register which addresses one after the other the electrodes of the second array, the first MOS transistors and the first register being integrated on a second semiconductor substrate and placed in a cryostat with the detectors, said device further comprising, integrated in the second semiconductor substrate and placed in the cryostat:

a second MOS transistor connected between a gate of each first MOS transistor and an electrode of said second array;

a capacitor, connected between each electrode of the first array and a reference potential, said capacitor serving successively for storing then reading the charges due to the detectors connected to this electrode;

a third MOS transistor connected between each electrode of the first array and the output of the photosensitive device and which allows the charges to be read which are stored in each capacitor;

a second shift register which, when the first register addresses an electrode of the second array, addresses one after the other, the gate of the third MOS transistors connected to an electrode of the first array, as well as the gates of the second MOS transistors controlling the gates of the first MOS transistors connected to another electrode of the first array, which allows all the detectors connected to each electrode of the second array to be read successively and the charges coming from a detector connected to each of the other electrodes of the first array to be integrated when a detector connected to an electrode of the first array is read.

4,609,825

DEVICE FOR MODULATING THE SENSITIVITY OF A LINE-TRANSFER PHOTOSENSITIVE DEVICE

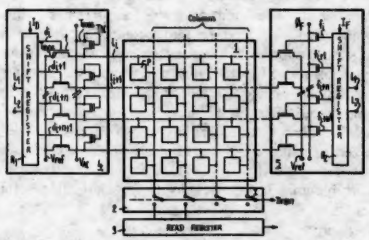
Jean L. Berger, Grenoble, and Louis Brissot, St. Egreve, both of France, assignors to Thomson-CSF, Paris, France

Filed Dec. 16, 1983, Ser. No. 562,463

Claims priority, application France, Dec. 23, 1982, 82 21628

Int. Cl.[4] H01J *40/14*; H04N *3/14*

U.S. Cl. 250—578 **8 Claims**



1. A device for modulating the sensitivity of a line-transfer photosensitive device having a photosensitive zone constituted by M lines of N photosensitive points, the photosensitive points of the different lines being connected in parallel by conductive columns to a memory which has the function of transferring signal charges coming from a line of photosensitive points to a read register and of transferring to an evacuation drain parasitic charges which are present in the columns prior to arrival of the signal charges, wherein said device comprises first and second means having the following functions:

the first means carry out a first reading operation of each line when the parasitic charges derived from the columns are transferred from the memory to the evacuation drain so that charges resulting from the first reading operation are consequently removed to the drain at the same time as said parasitic charges;

after an adjustable time interval, the second means carry out a second reading operation of each line when signal charges derived from the columns are transferred from the memory into the read register so that said signal charges resulting from the second reading operation are consequently transferred to the read register and wherein the first and the second means comprise a first and a second shift registers, with M stages, said shift registers being controlled by the same addressing signals, in which said M stages address the M lines of the photosensitive zone via transistors, a drive pulse being applied to the input of each register and said drive pulse being transferred periodically from one stage to the next and wherein modulation of the time interval which elapsed between the first and the second reading of the same line is obtained by varying the time interval which elapses between injection of said drive pulse into each register.

4,609,826

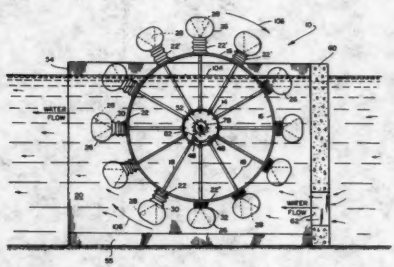
ENERGY EFFICIENT APPARATUS

Hyman Suroff, 6813 21st Ave., Brooklyn, N.Y. 11204

Filed Apr. 22, 1985, Ser. No. 725,559

Int. Cl.[4] F03G *7/04*

U.S. Cl. 290—1 R **8 Claims**



1. An energy efficient apparatus suitable for use in hot arid climates wherein a source of water is available, comprising in combination:

(A) a wheel member having a hub portion and a rim portion, said wheel portion being submerged within said water to a depth sufficient to more than immerse said wheel member hub portion, said wheel member having a plurality of spoke means equally disposed of about the circumference of said hub portion disposed between said hub portion and said rim portion, said rim portion including;

(i) a hollow generally round shaped member being open at one end, said hollow member being substantially rigid, buoyant and displacing more water than its weight,

(ii) first temperature sensitive means being expansible and affixed to the closed end of said hollow member, and

(iii) second temperature sensitive means being disposed within said first temperature sensitive means, said second temperature sensitive means having the ability to move only between two stable positions responsive to a change in ambient temperature;

said spoke means, including;

(i) a hollow shaft member affixed on one end to said hub portion and affixed on the other end to said first temperature sensitive means, and

(ii) a solid rod member disposed within said hollow shaft member affixed on one end to said second temperature sensitive means, the other end of said solid rod member extending into said hub portion;

said hub portion being hollow and including;

(i) fixed shaft means centrally disposed within said hollow hub portion,

(ii) escapement gear means operatively coupled to the other end of said solid rod member for driving said escapement gear means, transferring the movement of

said second temperature sensitive means to said escapement gear means,

(iii) spring means connected between said hub portion and said escapement gear means for transferring the energy stored in said spring means, from the displacement of said solid rod means driving said escapement gear means, to said hub portion in a direction to maintain said wheel member rotating, and

(iv) energy takeoff means disposed upon said hub portion; and

(B) energy utilization means operatively coupled to said energy takeoff means for providing a useable source of energy.

4,609,827

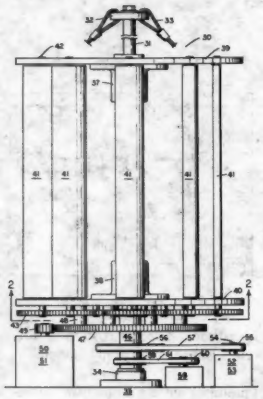
SYNCHRO-VANE VERTICAL AXIS WIND POWERED GENERATOR

Richard E. Nepple, 1630 N. Lakeview Ln., Flagstaff, Ariz. 86001

Filed Oct. 9, 1984, Ser. No. 659,167

Int. Cl.[4] F03D *7/06*

U.S. Cl. 290—44 **20 Claims**



1. A vertical axis wind powered generator comprising:

a stationary mainshaft support means;

a rotor rotatably mounted on and supported by a said stationary mainshaft;

a wind energy conversion means;

said rotor equipped with a multitude of airfoil shaped vanes, each said vane attached to its vane shaft and each said vane shaft rotatably mounted on a top circle of rotation at the top of said rotor and each said vane shaft rotatably mounted on a bottom circle of rotation at the bottom of said rotor, such that said circles of rotation have equal diameters and such that said circles of rotation are concentric with each other and with said vertical axis, and such that the top ends of said vane shafts are rotatably supported and equally spaced from each other by a pervious top support plate, and such that the bottom said ends of said vane shafts are rotatably supported and equally spaced from each other by a pervious bottom support plate, and such that aerodynamic forces developed by said airfoil shaped vanes are transferred to said support plates as rotary forces, and thus to said rotor as rotary forces;

a synchronous vane orientation means;

a normally stationary but incrementally adjustable orientation toothed-wheel mounted concentrically with and attached to a normally stationary but incrementally adjustable orientation spindle, and having exactly one half the pitch diameter of each wane toothed-wheel; a multitude of identical said vane toothed-wheels equal to the quantity of said multitude of airfoil shaped vanes such that one said vane toothed-wheel is mounted on and attached to one said vane shaft such that rotation of said vane toothed-wheel will cause rotation of said vane shaft which in turn will cause rotation of said airfoil shaped vane and such that each said vane toothed-wheel will mesh with a positive rotation coupling device which has any suitable pitch diameter, or pitch length, which will mesh with said multitude of identical said vane toothed-wheels and simultaneously mesh with said orientation toothed-wheel; a said rotor constructed such that said bottom support plate also provides support and alignment means for said quantity of said positive rotation coupling devices in such a manner that said quantity of said positive rotation coupling devices will cause all said multitude of said vane toothed-wheels to rotate simultaneously when said quantity of said positive rotation coupling devices is caused to rotate simultaneously by said orientation toothed-wheel; a said orientation spindle mounted concentrically with said mainshaft in a manner in which the angular position of said orientation spindle may be held stationary, or may be incrementally adjusted, by means located externally to said wind generator's said rotor, regardless of whether said rotor is stationary or rotating; and whereby holding said orientation spindle stationary while said rotor is rotating provides a said synchronous vane orientation means whereby the orientations of all said multitude of airfoil shaped vanes with respect to the wind is synchronized with the rotation of said rotor, and whereby angular incremental adjustment of the position of said orientation spindle provides a means for incremental and simultaneous adjustment of the orientations of all said vanes with respect to the wind so as to control the aerodynamic forces developed by said airfoil shaped vanes and thus control the rotary forces, rotary speed and power output of said rotor, or so as to cause said rotor to rotate in either direction of rotation;

an orientation spindle adjustment means;

an orientation servo-mechanism, located externally to said wind powered generator's said rotor, and said servo-mechanism equipped with an output shaft which is rotationally coupled to said orientation spindle such that adjusting, either manually or electrically, said orientation servo-mechanism's said output shaft in angular increments provides a means for adjusting said orientation spindle in angular increments with respect to the said wind so as to externally control the said synchronized orientations of the said airfoil shaped vanes with respect to the wind and thus externally control the said aerodynamic forces developed by said airfoil shaped vanes;

a power output means;

means for transferring the said rotary forces and said power output of said rotor from said rotor to the shaft of a driven machine, such as an electrical A.C. or D.C. generator.

4,609,828

SINGLE WIRE CURRENT SHARE PARALLELING OF POWER SUPPLIES

Kenneth T. Small, Cupertino, Calif., assignor to Boschert Inc., Milpitas, Calif.

Filed Apr. 30, 1984, Ser. No. 605,503

Int. Cl.[4] H02J *3/46*

U.S. Cl. 307—44 **5 Claims**

1. A first power supply adapted to be coupled in parallel with at least one other power supply, said first power supply comprising:

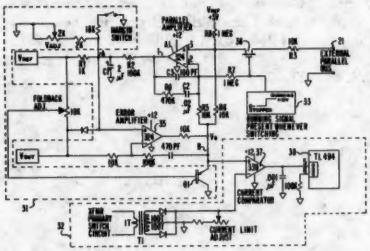
a first lead for receiving a first voltage indicative of the average of the output current of said first power supply at

an output terminal and of the output current of said at least one other power supply; voltage

a second lead for providing a second voltage indicative of the output current of said first power supply;

comparator means having first and second comparator input leads; and

switch means for coupling said first lead to said first comparator input lead, said second lead being coupled to said



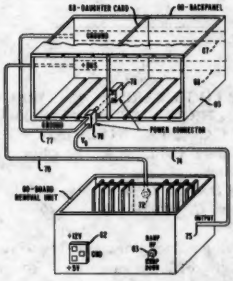
second comparator input lead, said comparator means providing an error signal indicative of the difference between the voltages supplied to said first and second comparator input leads from said first and second leads, the output current of said first power supply being responsive to said error signal, said switch means selectively decoupling said first lead from said first comparator input lead in response to said first power supply failing.

4,609,829

APPARATUS FOR ASSISTING IN THE CONNECTION AND DISCONNECTION OF A BOARD WITH AN ENERGIZED CIRCUIT

Gregory H. Milby, San Diego; Richard A. Daniel, Escondido, and Paul M. Rostek, San Diego, all of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 23, 1984, Ser. No. 643,501
Int. Cl.[4] H02J *7/00*
U.S. Cl. 307—150 **8 Claims**



1. In a system having an energizable circuit comprised of a plurality of circuit boards and a system DC power supply for energizing the circuit including each of the circuit boards, an apparatus for assisting in the electrical connection and disconnection of a selected one of the circuit boards with the circuit of the system energized, said apparatus comprising:

second DC power supply means for energizing said selected circuit board only during its connection and disconnection;

power connection means electrically connected to said second DC power supply means and having a board connector for electrical connection to the selected circuit board to be inserted into or removed from the energized circuit; and

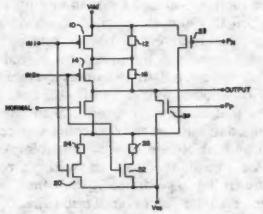
control means for controlling said second DC power supply means, said control means controlling the precharging of said selected circuit board to a selected voltage level prior to its insertion into the circuit, and the maintaining of a selected voltage level on said selected circuit board during its removal from the energized circuit.

4,609,830

PROGRAMMABLE LOGIC GATE

Yigal Brandman, Stanford, Calif., assignor to Zoran Corporation, Santa Clara, Calif.

Filed Nov. 28, 1983, Ser. No. 555,899
Int. Cl.[4] H03K *19/02, 19/094, 19/173, 19/20*
U.S. Cl. 307—202.1 **6 Claims**



1. A logic gate comprising

a first P channel field effect transistor and a first variable resistance device connected in parallel,

a second P channel field effect transistor and a second variable resistance device connected in parallel,

a third N channel field effect transistor and a third variable resistance device serially connected,

a fourth N channel field effect transistor and a fourth variable resistance device serially connected,

means connecting the series connection of said third field effect transistor and third variable resistance device in parallel with the series connection of said fourth field effect transistor and said fourth variable resistance device thereby forming parallel circuitry,

means serially connecting the parallel connection of said first field effect transistor and first variable resistance device, the parallel connecting of said second field effect transistor and second variable resistance device, and said parallel circuitry between first and second voltage potentials,

means for applying a first input to said first and third field effect transistors,

means for applying a second input to said second and fourth field effect transistors,

means for obtaining an output at the connection between the parallel connection of said second field effect transistor with said second variable resistance device and said parallel circuitry in response to said first and second inputs,

said first, second, third, and fourth variable resistance devices having a high resistance state and a low resistance state for selectively enabling said first input and said second input, and

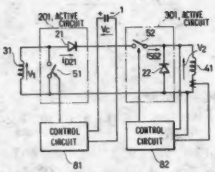
means for selectively applying sufficient current through said first, second, third, and fourth variable resistance devices to thereby alter the resistances of said variable resistance devices.

4,609,831

APPARATUS FOR TRANSMITTING ENERGY TO AND FROM COILS

Shigenori Higashino; Yoshiro Shikano, and Kanji Katsuki, all of Hyogo, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Mar. 9, 1983, Ser. No. 473,408
Claims priority, application Japan, Mar. 9, 1982, 57-38913
Int. Cl.[4] H03K 3/38, 17/12
U.S. Cl. 307—270 5 Claims



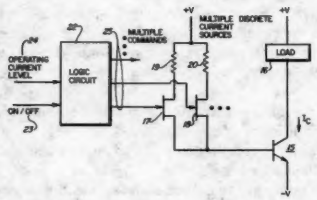
1. An apparatus for transmitting energy to an energy absorbing superconductive coil and from an energy releasing superconductive coil through a capacitor, comprising; and energy releasing superconductive coil having one end connected to one end of said capacitor, the other end of said energy releasing coil being connected to the other end of said capacitor through a first diode, a first on-off self-controllable switch connected to said energy releasing coil in parallel, a second diode connected to said energy absorbing superconductive coil in parallel, one end of said energy absorbing coil being connected to said one end of said capacitor through a second on-off self-controllable switch and the other end of said coil being connected to the other end of said capacitor, the terminal voltage of said capacitor being controllable so as to make said voltage unipolar by controlling the on and off states of said first switch, and the terminal voltage of said energy absorbing coil being controlled according to the quantity of said energy transmitted by controlling the on an off states of said second switch.

4,609,832

INCREMENTAL BASE DRIVE CIRCUIT FOR A POWER TRANSISTOR

Byron R. Mehl, Belvidere, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 14, 1983, Ser. No. 542,147
Int. Cl.[4] H03K 17/08
U.S. Cl. 307—270 10 Claims



1. A base drive circuit for a power transistor having base, collector and emitter elements and a load circuit connected in series with the collector and emitter elements, comprising:

a source of control signal which represents an operating current level of said transistor wherein said control signal is a digital signal;

a plurality of discrete current sources for providing increments of base current to the base element of said transistor; and

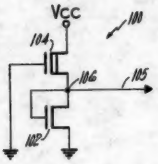
means responsive to said control signal for connecting a controlled number of said discrete current sources with the base element of said transistor to provide the desired base current dependent on the operating current level.

4,609,833

SIMPLE NMOS VOLTAGE REFERENCE CIRCUIT

Daniel C. Guterman, Plano, Tex., assignor to Thomson Components-Mostek Corporation, Carrollton, Tex.

Filed Aug. 12, 1983, Ser. No. 522,951
Int. Cl.[4] G05F 3/16
U.S. Cl. 307—297 2 Claims



1. A voltage reference circuit for an NMOS integrated circuit comprising:

a semiconductor substrate;

a self-based enhancement transistor, formed in said substrate, and connected between ground and an output node, having and enhancement gate, with an enhancement gate width and enhancement gate length, connected to said output node; and

a self-biased depletion transistor, formed in said substrate, and connected between said output node and a supply voltage terminal, having a depletion gate, with a depletion gate width and a depletion gate length, connected to ground;

said enhancement transistor and said depletion transistor are substantially matched in size, whereby the ratio of a width to length ratio of said enhancement transistor and a width to length ratio of said depletion transistor is one.

4,609,834

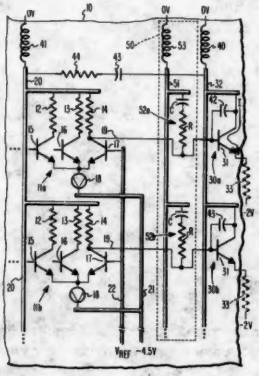
INTEGRATED LOGIC CIRCUIT INCORPORATING A MODULE WHICH GENERATES A CONTROL SIGNAL THAT CANCELS SWITCHING NOISE

Laszlo V. Gal, Poway, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 24, 1984, Ser. No. 685,497
Int. Cl.[4] H03K 17/16, 19/086
U.S. Cl. 307—443 14 Claims

1. A circuit having reduced susceptibility to switching noise including: a plurality of logic gate means for generating and switching logic signals on respective output conductors; a plurality of driver means having control terminals respectively coupled to said output conductors; a current bus coupled to said plurality of driver means; each driver means operating to pass a large current from said bus in response to a logic one signal on its control terminal and to pass a small current in response to a logic zero; said bus having a parasitic inductance which generates a noise signal when said switching logic signals cause current on said bus to change in magnitude; a parasitic capacitive coupling from said bus to the control terminal of each driver means which couples a portion of said noise signal on said bus to the control terminals; and a noise reducing module coupled to the control terminal of each driver means;

said module including a common bus and a plurality of capacitors having one terminal coupled to the control terminal of a



respective driver means and having another terminal coupled to said common bus.

4,609,835

SEMICONDUCTOR INTEGRATED CIRCUIT

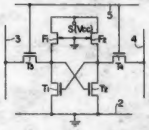
Yoshio Sakai; Toshiaki Masuhara, both of Hachioji; Osamu Minato, Kokubunji, and Toshio Sasaki, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

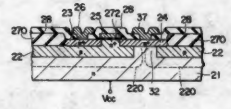
Continuation of Ser. No. 96,684, Nov. 23, 1979, abandoned. This application Mar. 1, 1983, Ser. No. 471,130

Claims priority, application Japan, Nov. 24, 1978, 53-160710[U]

Int. Cl.[4] G11C *11/40;* **H01L** *29/78, 27/04;* **H03K** *19/094*

U.S. Cl. 307—450 **17 Claims**





13. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type;

a semiconductor region of a second conductivity type, opposite said first conductivity type, formed at a surface portion of said substrate and having an opening therein containing the material of said semiconductor substrate;

a MOS transistor formed within said semiconductor region and having a drain region; and

a junction-gate field effect transistor, having said substrate as its drain region formed in said opening, said junctiongate field effect transistor being connected to the drain region of said MOS transistor so as to connect the drain region of said MOS transistor to said substrate.

4,609,836

CMOS TRANSMISSION CIRCUIT

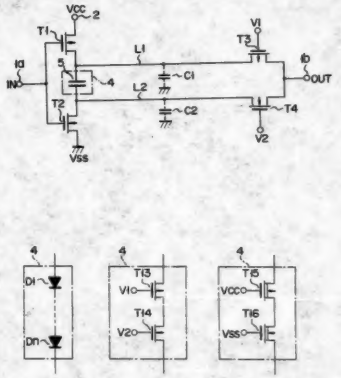
Hideharu Koike, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Jun. 15, 1984, Ser. No. 621,084

Claims priority, application Japan, Aug. 31, 1983, 58-159300

Int. Cl.[4] H03K *19/017, 17/04, 17/687*

U.S. Cl. 307—451 **14 Claims**



1. A CMOS transmission circuit comprising:

an input terminal which receives an input signal;

a first voltage source;

a second voltage source;

an enhancement type first MOSFET of a first conductivity type which has a gate connected to said input terminal, a first terminal connected to said first voltage source, and a second terminal;

a second enhancement type MOSFET of a second conductivity type which has a gate connected to said input terminal, a first terminal connected to said second voltage source, and a second terminal;

a constant voltage circuit electrically connected between the second terminal of said first MOSFET and the second terminal of said second MOSFET;

a first transmission line which has a start point connected to the second terminal of said first MOSFET, and an end point;

an output terminal for outputting an output signal;

a third enhancement type MOSFET of a first conductivity type which has a first terminal connected to the end point of said first transmission line, a second terminal connected to said output terminal, and a gate;

a first reference voltage terminal connected to the gate of said third MOSFET and supplied with a first reference voltage which is higher than the potential of said second voltage source and lower than a voltage value obtained by subtracting the absolute value of the threshold voltage of said third MOSFET from the potential of said first voltage source;

a second transmission line which has a start point connected to the second terminal of said second MOSFET, and an end point;

a fourth enhancement type MOSFET of a second conductivity type which has one terminal connected to the end point of said second transmission line, a second terminal connected to said output terminal, and a gate; and

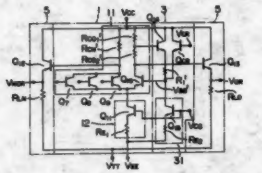
a second reference voltage terminal connected to the gate of said fourth MOSFET and supplied with a second reference voltage which is higher than a threshold voltage of said fourth MOSFET and greater than the potential of said second voltage source.

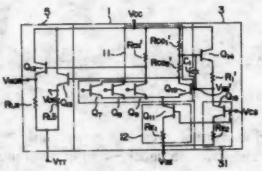
4,609,837

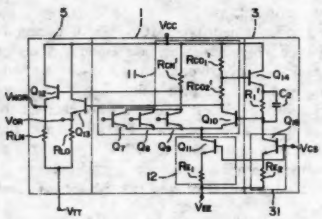
HIGH-SPEED LOGIC CIRCUIT WITH A CONSTANT CURRENT SOURCE ARRANGEMENT

Masayoshi Yagyuu, and Hiroyuki Ito, both of Kokubunji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 1, 1983, Ser. No. 547,586
Claims priority, application Japan, Nov. 1, 1982, 57-190860
Int. Cl.[4] H03K *19/013, 19/086, 19/092, 17/04*
U.S. Cl. 307—455 40 Claims







1. A high-speed logic circuit comprising:

a logic part comprised of a differential transistor circuit for comparing an input signal with a reference voltage;

a feedback circuit for receiving an in-phase output from said differential transistor circuit which output is logically in-phase to the input signal, and supplying an output signal to said differential transistor circuit as the reference voltage, said feedback circuit including a first transistor having a base applied with the in-phase output of said differential transistor circuit, and a first resistor coupled at one end thereof to an emitter of said first transistor, wherein the output signal of said feedback circuit serving as the reference voltage is generated at the other end of said first resistor;

a constant current source circuit connected between the other end of said first resistor and a power source for supplying a predetermined first voltage; and

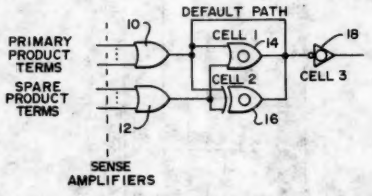
electrostatic capacitance means coupled between the base of said first transistor and a point at which said differential transistor circuit receives the output signal of said feedback circuit.

4,609,838

PROGRAMMABLE ARRAY COMBINATORIAL (PAC) CIRCUITRY

Eddy C. Huang, San Jose, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed May 30, 1984, Ser. No. 615,295
Int. Cl.[4] H03K *19/173*
U.S. Cl. 307—465 7 Claims



1. Programmable array combinatorial circuitry comprising

first and second gates for respectively receiving primary product terms and spare product terms and producing first and second signals representing said primary product terms and said spare product terms,

first and second input terminals for receiving said first and second signals, respectively, and

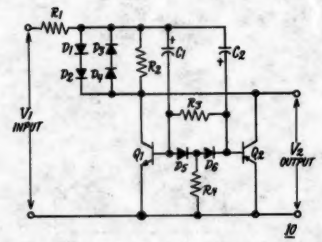
logic means operably connected to said first and second terminals for receiving said first and second signals and responsive to control signals for providing an output signal representing said first signal, an OR function of said first and second signals, or an exclusive OR function of said first and second signals.

4,609,839

NOISE INVERTER CIRCUIT FOR A POWER LINE COMMUNICATION SYSTEM

Edward K. Howell, Simsbury, Conn., assignor to General Electric Company, Portsmouth, Va.

Filed Oct. 1, 1984, Ser. No. 656,804
Int. Cl.[4] H03K *5/08*
U.S. Cl. 307—542 7 Claims



1. A noise inverter circuit for a power line communication system comprising:

first and second input terminals for receiving an alternating current electrical communication signal voltage which may include impulse noise;

third and fourth output terminals for providing an output alternating current electrical communication signal voltage, said second input terminal and said fourth output terminal being connected in common;

first and second oppositely polled capacitors each connected at one end thereof to said first input terminal;

first and second diodes each having an anode and a cathode, the cathode of said first diode being connected to the other end of said first capacitor and the anode of said

second diode being connected to the other end of said second capacitor;

a first resistor connected at one end to the anode of said first diode and the cathode of said second diode and at the other end to the common connection of said second input terminal and the fourth output terminal, said first and second capacitors charging through said first and second diodes, respectively, and said first resistor to the prevailing peak signal voltage on alternate polarity peaks;

a second resistor connected between said first and second capacitors to provide a discharge path therebetween;

a third resistor connected between said first input terminal and said third output terminal for limiting the peak voltage across said first and second capacitors and reducing the peak output voltage across said third and fourth output terminals; and

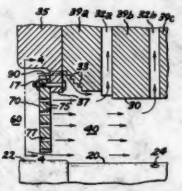
first and second transistors of opposite conductivity type each having a base, collector and emitter, the collectors of said first and second transistors being connected in common to said third output terminal, the emitters of said first and second transistors being connected to the common connection of said second input terminal and said fourth output terminal, the base of said first transistor being connected to the cathode of said first diode, and the base of said second transistor being connected to the anode of said second diode, whereby said first and second transistors are biased into conduction on alternate polarity peaks for signal voltages above a predetermined amplitude to thereby invert the peak amplitudes to a value less than the signal amplitude.

4,609,840

BAFFLE FOR IMPROVING COOLANT GAS FLOW DISTRIBUTION IN THE GAP REGION OF A GAS COOLED DYNAMOELECTRIC MACHINE

James V. Eats, Albany; Norman J. Lipstein, Schenectady, and Edward H. Miller, Rexford, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 5, 1984, Ser. No. 668,239
Int. Cl.[4] H02K *9/00*
U.S. Cl. 310—58 **47 Claims**



1. A method for controlling flow of coolant gas from an end space region to a gap region of a gas cooled dynamoelectric machine, said machine including a rotor having an axis rotation and a stator speced from and circumferentially surrounding the rotor for forming the gap region therebetween, the gap region having an axial end and the stator including a stator ventilating duct in gas flow communication with the gap region, comprising the steps of:

directing a flow of coolant gas from the end space region of the machine into the gap region at the axial end of the gap region;

dividing the flow of coolant gas entering the axial end of the gap region into a plurality of discrete gas flow paths, such that unimpeded gas flow communication between the end space region and the gap region is maintained through the gas flow paths; and

diffusing the plurality of discrete gas flow paths at a predetermined distance into the gap region from the axial end of the gap region.

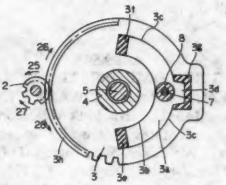
whereby rapid radial diffusion of coolant gas flow downstream the axial end of the gap region ensures adequate coolant gas flow to stator ventilating duct.

4,609,841

THREE-ROTARY POSITION CONTROL DEVICE

Kazuo Masaki, Chiryu; Motoji Suzuki, Okazaki, and Noriyuki Nakashima, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 17, 1985, Ser. No. 724,334
Claims priority, application Japan, Apr. 25, 1984, 59-84928
Int. Cl.[4] H02K *7/10*
U.S. Cl. 310—75 R **7 Claims**



1. A rotary position control device comprising:

(1) a motor having an output shaft with a pinion;

(2) a disk member having a toothed portion on its circumferential part, said disk member being rotated by said toothed portion meshed said pinion;

(3) a first limit stop provided on said disk member;

(4) a second limit stop provided on said disk member; and being angularly positioned with respect to said first limit stop;

(5) a rod member disposed in said first and second limit stops for limiting further rotation of said disk member by engaging said first or second limit stop;

(6) an electromagnetic solenoid for driving said rod member when energized; and

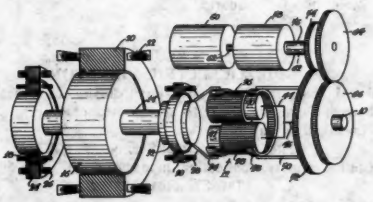
(7) a third limit stop provided on said disk member and being positioned between said first and second limit stops for limiting the rotation of said disk member between the first and second stop positions of said disk member by holding said rod member when said electromagnetic solenoid is energized.

4,609,842

IN-LINE CONSTANT SPEED DRIVE AND GENERATOR

Mohd A. Aleem, Roscoe; Wayne A. Flygare, and E. William Kruger, both of Rockford, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 23, 1984, Ser. No. 674,278
Int. Cl.[4] H02K *7/20, 17/44, 19/38, 47/00*
U.S. Cl. 310—112 **7 Claims**



1. An in-line integrated drive generator comprising:

a constant speed drive unit including an input shaft and adapted to be connected to a prime mover, an output including a differential on an axis and means interconnecting said input shaft and said output to cause said output to

rotate at a constant speed independent of the speed of a prime mover;

a brushless generator including a main field structure and an exciter rotor therefor both rotatable about said axis and connected to said output to be driven thereby;

a permanent magnet generator for energizing an exciter and including a permanent magnet assembly rotatable about said axis and contained within said constant speed drive unit and mounted on said output;

and first and second axially aligned and interconnected housings, one containing said brushless generator and the other containing said constant speed drive unit and said permanent magnet generator;

whereby an in-line generator with minimal frontal area and axial length is provided.

4,609,843

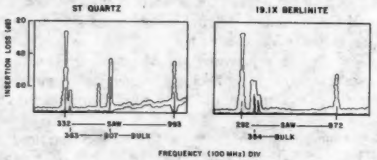
TEMPERATURE COMPENSATED BERLINITE FOR SURFACE ACOUSTIC WAVE DEVICES

Paul H. Carr, and Jose H. Silva, both of Bedford, Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 461,425, Jan. 27, 1983, abandoned. This application Feb. 26, 1985, Ser. No. 705,060

Int. Cl.[4] H01L *41/08*

U.S. Cl. 310—313 A **6 Claims**



1. A surface acoustic wave device substrate member of single crystal berlinite having an acoustic surface wave propagation surface defined by a plane that substantially coincides with the Euler angles Lambda=90.0°, Mu=90.0°, and Theta=19.1°, with transducer means for surface wave coupling which provides cubic temperature compensation, with transducer means perpendicular to the direction of propagation which is 19.1° from the positive X-axis for surface wave coupling,

wherein said transducer means comprises interdigital transducers about 2 millimeters apart having a transducer length of about 0.333 millimeters, a linewidth and spacing of about 1.262 micrometers, and an acoustic aperture of about 0.250 millimeters,

whereby the device provides cubic temperature compensation and a significantly lower bulk wave spurious response compared to ST-cut quartz, the frequency separation between the surface acoustic wave fundamental and the closest bulk wave response being substantially greater than in ST-cut quartz.

4,609,844

PIEZOELECTRIC VIBRATOR

Takeshi Nakamura, Uji, and Ikuo Matsumoto, Nagaokakyo, both of Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

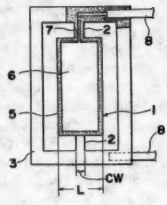
Filed Aug. 1, 1985, Ser. No. 761,397

Claims priority, application Japan, Aug. 10, 1984, 59-168678

Int. Cl.[4] H01L *41/08*

U.S. Cl. 310—321 **3 Claims**

1. In a piezoelectric vibrator capable of vibrating under an expansion mode of vibration, which includes a piezoelectric vibrating element having a generally right angled parallelogram-shaped vibrateable substrate, made of a metallic material having a constant modulus of elasticity, said substrate being supported by a retaining means through a pair of connecting elements which extend outwardly from an arbitrarily chosen pair of side edges, respectively, so as to terminate in rigid connection with the retaining means, the improvement com-



prising: the width of each of the connecting elements as measured in a direction lengthwise of each of said side edges being selected to be within the range of 1/7 to ⅓ of the length of said each side edge.

4,609,845

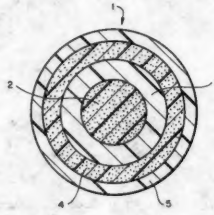
STRETCHED PIEZOELECTRIC POLYMER COAXIAL CABLE

Pravin L. Soni, Union City, and Nigel R. Farrar, Mountain View, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jul. 6, 1984, Ser. No. 628,358

Int. Cl.[4] H01L *41/08*

U.S. Cl. 310—357 **7 Claims**



1. A method of preparing a piezoelectric coaxial cable which comprises

(a) extruding a core of a high molecular weight conductive polymer material having conductive particles dispersed therein; and

(b) extruding a piezoelectric polymer layer around the core thereby forming a composite structure having an intimate bond between the polymer of the core and the piezoelectric poly-polymer;

(c) stretching the resulting composite structure axially such that the length of the structure is increased at least about three times its original length;

(d) applying an outer conductor onto the surface of the piezoelectric polymer layer; and

(e) polarizing the piezoelectric layer to increase the piezoelectric properties thereof.

4,609,846

IMAGE PICK-UP TUBE HAVING COLLECTOR AND BALANCE ELECTRODES

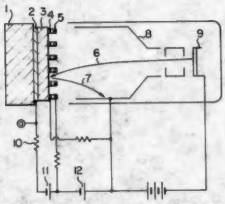
Chushirou Kusano, Tokorozawa; Sachio Ishioka; Yasuharu Shimomoto, both of Tokyo; Yoshinori Imamura, Kanagawa, and Hirofumi Ogawa, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 20, 1984, Ser. No. 652,459

Claims priority, application Japan, Sep. 21, 1983, 58-172934

Int. Cl.[4] H01J *29/45, 29/82*

U.S. Cl. 313—384 19 Claims



1. An image pick-up tube of the type in which an electron beam is scanned on a photoelectric conversion target having a transparent substrate and a transparent electrode and a photoconductive layer formed on the transparent substrate, said tube comprising a first stripe-like or grid-like segmented electrode formed on a beam scanning surface of said photoconductive layer with its electrode segments electrically connected to each other, in insulating layer formed on said first electrode, and a second stripe-like or grid-like segmented electrode formed on said first electrode through said insulating layer with its electrode segments electrically connected to each other so that said second electrode is disposed farther away from said beam scanning surface of said photoconductive layer than said first electrode, said first and second electrode enabling elimination of spurious signals by preventing the redistribution of secondary electrons which may occur due to a potential gradient in said photoconductive layer.

4,609,847

CATHODE RAY TUBE WITH MAGNETIC POLE PIECES WHICH SUPPORT A RING GETTER

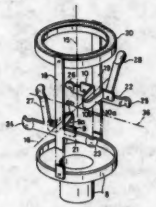
Shigeya Ashizaki, Takatsuki; Masamichi Kimura, Ibaraki, and Masato Taniguchi, Uji, all of Japan, assignors to Matsushita Electronics Corporation, Kadoma, Japan

Filed Dec. 22, 1983, Ser. No. 564,220

Claims priority, application Japan, Dec. 24, 1982, 57-234500

Int. Cl.[4] H01J *29/70, 29/76, 29/94*

U.S. Cl. 313—413 3 Claims



1. A monochrome type cathode ray tube apparatus having a single-beam gun, comprising:

a cathode ray tube having an electron gun, a fluorescent screen and an evacuated envelope enclosing said electron gun and said fluorescent screen therein; magnetic deflection means for producing at least a horizontal and a vertical magnetic field having a pin-cushion type magnetic flux distribution;

a pair of pole pieces disposed to oppose one another with the path of an electron beam from said electron gun inbetween for compensating distortion of deflection, said pole pieces being between the electron beam outlet of said electron gun, and a center part of said deflection means, each of said magnetic pole pieces being substantially T-shaped and each having a central protrusion disposed in an opposed relationship to the central protrusion of the other pole piece with said path of said electron beam inbetween, said magnetic pole pieces being secured in position with respect to one another and with respect to said cathode ray tube by holding members of non-magnetic metal, said holding members being secured at one end to the front end of said electrode gun and being secured at the other ends thereof to a ring getter to thereby form a fixed frame for supporting said pole pieces.

4,609,848

COLOR CATHODE-RAY TUBE WITH INSULATING ROD SUPPORT FOR ELECTRON GUN

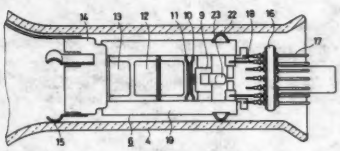
Shinya Takenobu, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1984, Ser. No. 662,452

Claims priority, application Japan, Dec. 20, 1983, 58-197380[U]

Int. Cl.[4] H01J *29/82, 29/50*

U.S. Cl. 313—417 1 Claim



1. A color cathode-ray tube comprising a vacuum vessel constituted of a panel portion provided in its inner surface with a fluorescent screen, a funnel portion and a neck portion provided with an internal conductive coating and an electron gun containing a plurality of electrodes provided in said neck portion, said electron gun being provided at longitudinally different plural positions thereof respectively with supporting means for supporting the central axis of said electron gun in coincidence with the central axis of said neck portion, said plural supporting means comprising:

a first supporting means, provided in the front portion of said electron gun, comprising contactors to be in contact with said conductive coating adjacent the transition between said funnel and neck portions;

a plurality of externally grooved insulator rods arranged on the exteriors of said electrodes to support said electrodes, including a cathode electrode, of said electron gun; and

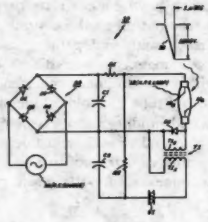
a second supporting means provided in the rear portion of said electron gun, disposed to project outwardly of said insulator rods in engagement with said grooves of said insulator rods.

4,609,849

HIGH PRESSURE SODIUM VAPOR LAMP HAVING D.C. RESISTIVE BALLAST CIRCUITS

Park French, Aurora, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 6, 1984, Ser. No. 679,143
Int. Cl.[4] H05B *37/00, 39/00, 41/14*
U.S. Cl. 315—200 R 7 Claims



1. A ballast circuit for a high pressure sodium (H.P.S.) lamp comprising:

a full-wave rectifier adapted to receive across its input nodes an alternating current (A.C.) source and which develops a direct current (D.C.) voltage across its first and second output nodes serving as the operating voltage of said H.P.S. lamp;

a ballast resistor having a first end connected to the first output node and its second end connected to a first end of said H.P.S. lamp;

a capacitor for storing an electrical charge having a first end connected to said second end of said ballast resistor and its second end connected to the second output node;

a transformer having a primary and a secondary winding, each of the primary and secondary windings having their first end connected to said second output node, the second end of said secondary winding being connected to the second end of said H.P.S. lamp;

a diode having its cathode and anode respectively connected to said first and second ends of said secondary winding; and

a switching means for sensing the voltage applied to said H.P.S. lamp and having a preselected breakdown voltage characteristic, said switching means having one end connected to the second end of said primary winding and its other end connected to said first end of said capacitor.

4,609,850

CURRENT DRIVEN GAIN CONTROLLED ELECTRONIC BALLAST SYSTEM

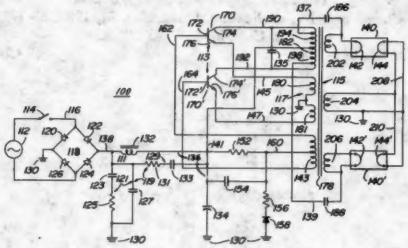
Jacques M. Hanlet, Loxahatchee, Fla., assignor to Intent Patents A.G., Liechtenstein

Continuation-in-part of Ser. No. 500,147, Jun. 1, 1983, Pat. No. 4,503,362. This application Jan. 27, 1984, Ser. No. 573,769
The portion of the term of this patent subsequent to Mar. 5, 2002, has been disclaimed.
Int. Cl.[4] H05B *41/24, 41/36*
U.S. Cl. 315—219 27 Claims

1. A current driven gain controlled electronic ballast system having a power source for actuating at least one gas discharge tube, comprising:

(a) filter means connected to said power source for (1) establishing a substantially constant voltage signal, and, (2) suppressing harmonic frequencies generated by said electronic ballast system;

(b) induction means coupled to said filter means for generating a voltage across at least one of said gas discharge tubes responsive to a driving current, said induction means including automatic gain control means for maintaining said driving current at a predetermined value and having trigger means for generating a switching signal, said filter means including a correction network for substantially reducing harmonic frequencies generated by said induction means and smoothing filter means coupled in parallel relation to said correction network for maintaining said substantially constant voltage signal, said smoothing filter means including a series inductor coupled in series relation to said power source and said induction means; and,



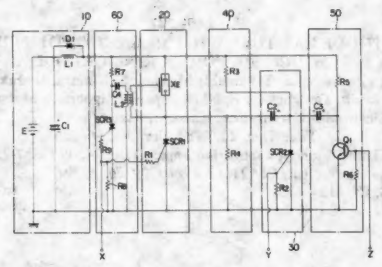
(c) switching means coupled to said induction means for establishing said driving current at a substantially constant and predetermined frequency responsive to said switching signal established by said trigger means, said driving current being passed through said induction means for generating said voltage across said gas discharge tube substantially indpendent of fluctuations in a voltage signal of said power source.

4,609,851

ELECTRONIC FLASH SYSTEM WITH CONTROL OF COMMUTATION CAPACITOR

Toru Suzuki, Tokyo, Japan, assignor to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 25, 1984, Ser. No. 634,681
Claims priority, application Japan, Jul. 29, 1983, 58-139197
Int. Cl.[4] H05B *41/32*
U.S. Cl. 315—241 P 5 Claims



3. An electronic flash system including flashing means for producing a flash of illuminating light, said flashing means having first switching means for controlling operation of said flashing means, first bypass means including first capacitor means and second switching means which are connected in series with each other and connected in parallel with said first switching means, charging means connected with said first capacitor means so that said first capacitor means is charged in one polarity when said second switching means is turned off, first trigger means for turning on the first switching means and initiating operation of the flashing means, second trigger means for turning on the second switching means to make the first capacitor means discharge and apply to the first switching means a voltage with turns off the first switching means to thereby make current from the flashing means flow through

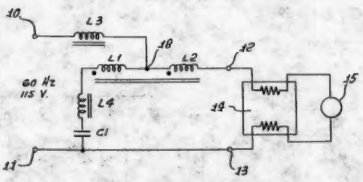
said first capacitor means so that the capacitor means is charged in the opposite polarity, second bypass means having second capacitor means and third switching means which are connected together in series and adapted for applying a reverse voltage to the second switching means to turn-off the second switching means, third trigger means for turning off the second switching means, said charging means including resistor means connected between electric power source means and said first capacitor means and having a resistance value which allows a current not smaller than a current at which the second switching means is turned off.

4,609,852

LAMP BALLAST WITH NEAR UNITY POWER FACTOR AND LOW HARMONIC CONTENT

Lloyd J. Perper, Tucson, Ariz., assignor to Iota Engineering Co., Tucson, Ariz.

Continuation-in-part of Ser. No. 522,505, Aug. 12, 1983, Pat. No. 4,538,094. This application May 24, 1984, Ser. No. 613,233
The portion of the term of this patent subsequent to Aug. 27, 2002, has been disclaimed.
Int. Cl.[4] H05B *41/16*
U.S. Cl. 315—278 **21 Claims**



1. A ballast circuit for a fluorescent lamp, comprising in combination:

means defining first and second line terminals;

means defining first and second load terminals, with said second line terminal connected to said second load terminal;

first, second and third inductances connected at a junction;

a capacitance connected in series with said first inductance between said junction and said second line terminal, with said second inductance connected to said first load terminal and said third inductance connected to said first line terminal; and

first and second fluorescent lamp filament power sources for providing electric power to the respective lamp filaments;

with the magnitudes of said capacitance and the inductance in series with it selected to provide series resonance to produce about a minimum third harmonic line current with a connected load.

4,609,853

CAST BELL MOTOR DRIVE SYSTEM AND METHOD

Richard E. Mattern, Souderton, Pa., assignor to Schulmerich Carillons, Inc., Sellersville, Pa.

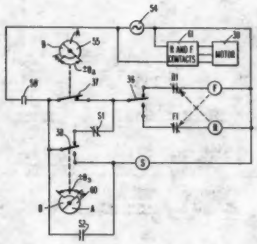
Filed Oct. 9, 1984, Ser. No. 658,472
Int. Cl.[4] H02P *3/20*
U.S. Cl. 318—363 **10 Claims**

1. An electric drive system for driving a bell or like object, the system having an electric motor operatively connected to said bell for supplying drive energy and a circuit for controlling said motor,

duration means operatively connected to said motor for defining a motor drive duration angle through which said motor drives said bell and duration switch means connected in said circuit for switching power to said motor as long as it is within said duration angle,

direction means operatively connected to said motor for sensing the direction of bell movement and direction switch means connected in said circuit for switching electric energy to drive said bell in the sensed direction,

start means operatively connected to said motor for starting said motor, said start means having start angle means for defining a start angle greater than said duration angle, and



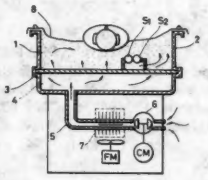
said start means further having start switching means connected in said circuit for switching power to said motor only when said drive system is initially energized and said bell is within said start angle.

4,609,854

CONTROL DEVICE FOR A HOSPITAL BED

Hitoshi Yamamoto, and Masaya Kurita, both of Kanagawa, Japan, assignors to Fuji Electric Company Ltd., Kawasaki, Japan

Filed Feb. 1, 1985, Ser. No. 697,406
Int. Cl.[4] G05D *23/00*; H02P *3/00*
U.S. Cl. 318—471 **10 Claims**



1. In a hospital bed having a bed-mat containing bead-like particles, a compressor motor for driving a compressor that supplies compressed air for suspending and circulating the particles within the bed-mat, and a cooler for cooling the compressed air to be supplied to the bed-mat, a control device comprising:

a first temperature sensor for detecting the temperature of said particles and for generating a first output signal having a first value when the temperature of said particles exceeds a maximum level and a second value when the temperature of the particles does not exceed said maximum level;

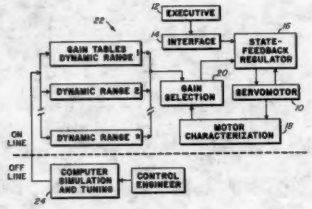
means for continuously operating said compressor motor and intermittently operating said cooler in response to said second value of said first output signal; and

means for controlling said operating means to operate said cooler and said compressor motor simultaneously and intermittently in response to said first value of said first output signal.

4,609,855
ADAPTIVE SERVOMOTOR CONTROL

Nicholas W. Andrews, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 9, 1984, Ser. No. 670,253
Int. Cl.[4] G05B *13/00*
U.S. Cl. 318—561 3 Claims



1. In a servomotor apparatus of the type comprising a servomotor, a servomotor controller and feedback means for providing feedback from said servomotor to said servomotor controller, the improvement comprising:

characterization means for periodically evaluating the equation:

$$\omega_m = \frac{2\theta(t)K_m\Omega}{Et^2};$$

where

Wm is mechanical break frequency, θ (t) is motor shaft position with time,

$K_m\Omega$ is the back EMF constant of the servomotor,

E is the voltage input to the servomotor, and

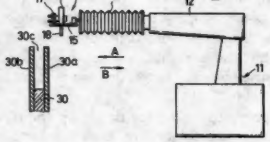
t is time; and

gain selection means for selecting one of a plurality of gain sets in response to said characterization of said servomotor, said selected gain set being supplied to said servomotor controller.

4,609,856
SLOT DETECTING APPARATUS

Yoshiyuki Hirose, Yokohama, and Kyuji Kiryu, Sagamihara, both of Japan, assignors to Tokico Ltd., Japan

Filed Nov. 15, 1984, Ser. No. 671,898
Claims priority, application Japan, Nov. 18, 1983, 58-217267
Int. Cl.[4] G05B *1/06*
U.S. Cl. 318—640 2 Claims



1. A slot detecting apparatus comprising

a sensor for detecting a slot of a workpiece, said sensor being movable over said workpiece so as to traverse said slot and producing an output having a waveform;

an analog-to-digital converter for sampling the output of said sensor at a plurality of points and for converting the output of said sensor into an output digital signal having levels corresponding to the sampled levels;

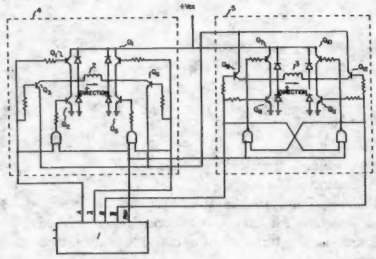
comparing means for comparing said output digital signal with a plurality of threshold levels which are mutually different, and for producing a comparison result for each of the plurality of threshold levels; and

discriminating means for discriminating the position of said slot based on a comparison result which indicates that the output of said sensor has the waveform from among a plurality of comparison results which are obtained from said comparing means for the plurality of threshold levels, said comparing means and said discriminating means being constituted by a microcomputer which has a memory part and a central processing unit, said memory part being pre-sorted with threshold digital signals indicating the plurality of threshold levels with which said output digital signal is compared, said central processing unit successively reading out the stored threshold digital signals from said memory part and comparing said output digital signal with the read out threshold digital signals.

4,609,857
PULSE MOTOR DRIVING CIRCUIT FOR FLOPPY DISC

Hiroshi Ishii, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 25, 1984, Ser. No. 654,143
Claims priority, application Japan, Sep. 30, 1983, 58-184287
Int. Cl.[4] G05B *19/40*
U.S. Cl. 318—696 5 Claims



1. A drive for moving a head in a memory disc reading apparatus comprising:

a power source developing a supply voltage;

a pulse motor connected to move said head and including two driving phase coils;

means for supplying pulses of said supply voltage to said phase coils of said pulse motor in a desired manner so as to drive the motor in a movement mode and so as to hold said motor in position in a wait mode;

cascade means for serially connecting said phase coils in said hold mode so as to reduce the effective voltage supplied thereto by dividing said supply voltage.

4,609,858
METHOD AND APPARATUS FOR AUTOMATIC RUNNING CONTROL OF A LOOM

Katsuhiko Sugita, and Toshiyuki Sakano, both of Ishikawa, Japan, assignors to Tsudakoma Kogyo Kabushiki Kaisha, Japan

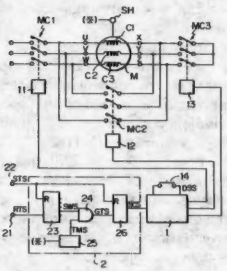
Continuation-in-part of Ser. No. 354,726, Mar. 4, 1982, abandoned. This application Aug. 20, 1984, Ser. No. 642,522
Int. Cl.[4] H02P *1/32;* D03D *51/00*
U.S. Cl. 318—778 12 Claims

1. Method for running control of a loom having a crank shaft comprising the steps of

subjecting the primary winding of a drive motor for said loom to the application of an initial voltage higher than its rated voltage during the starting period of loom running, and

changing said initial voltage to said rated voltage after said

starting period at a moment other than the moment of beating on the cloth-fell,



the electric power source voltage for said drive motor being unchanged.

4,609,859

INDUCTION MOTOR DRIVE CIRCUITS

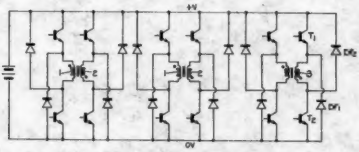
Barry W. Williams, 108 Princes Gardens, West Acton, London, England

Filed Nov. 21, 1984, Ser. No. 673,891

Claims priority, application United Kingdom, Dec. 1, 1983, 8332144

Int. Cl.[4] H02P *5/40*

U.S. Cl. 318—810 **11 Claims**



1. A drive circuit for an induction motor having a pair of windings associated with each phase of the motor, with the windings of each pair being connected in antiphase, the circuit comprising supply means for connection to a d.c. supply, respective switching means associated with each motor winding for supplying current from the supply to the associated winding in only one direction, and frequency control means for switching the switching means on and off so as to cause the windings of each winding pair to conduct current alternately and in opposite directions at a frequency which may be varied so as to vary the speed of the motor, wherein the switching means associated with each motor winding incorporates a switching element and a free-wheeling diode connected in series across the supply means and adapted for connection to the associated winding at their common connection point, whereby the freewheeling diode provides a path for freewheeling motor current when the associated switching element is switched off.

4,609,860

BATTERY CHARGER HAVING AUTOMATIC DEEP DISCHARGE MODE

Kenneth R. Fasen, Lake In The Hills, Ill., assignor to James P. Liautaud, Cary, Ill.

Filed Sep. 6, 1983, Ser. No. 529,860

Int. Cl.[4] H02J *7/00*

U.S. Cl. 320—14 **4 Claims**

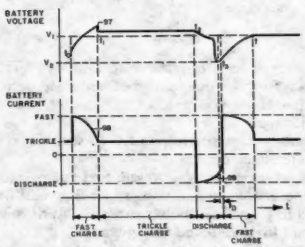
1. A battery charger for supplying current to a rechargable battery comprising:

a counter having at least first, second, third and fourth counting states occurring repetitively in sequence in response to applied clock pulses, said counter remaining in said first counting state in response to an applied reset signal, and providing first, second and third charge control signals indicative of said first second and fourth counting states, respectively;

battery charging circuit means responsive to said charge control signals for supplying current to the battery, said current comprising a relatively low trickle charge current in the presence of said first charge control signal, a relatively larger fast charge current in the presence of said second charge contol signal, and a deep discharge current in the presence of said third charge control signal;

battery voltage sensing means responsive to the terminal voltage of the battery for providing a first mode control signal in response to said battery voltage exceeding a first predetermined reference level, and a second mode control signal in response to said battery voltage falling below a second predeermined reference level;

a source of continuous clock pulses for advancing said counter progressively through said first, second, third and fourth counting states;



circuit means responsive to said first mode control signal for applying a reset signal to said counter to maintain said counter in said first counting state when said battery voltage exceeds said first predetermined reference level, and for applying said clock pulses to said counter to advance said counter from said first to said second counting state when said battery voltage falls below said first predetermined reference level; and

a user actuated switch;

circuit means for applying said clock pulses to said counter to advance said counter to said fourth counting state upon actuation of said user-actuated switch, and for maintaining said counter in said fourth counting state concurrently with said battery voltage remaining above said second predetermined reference level; and

circuit means responsive to said second mode control signal for applying said clock pulses to said counter to advance said counter from said fourth counting state upon said battery voltage falling below said second predetermined reference level.

4,609,861

CIRCUIT ARRANGEMENT FOR RAPIDLY CHARGING A BATTERY

Masahiro Inaniwa; Shun Suzuki, and Yoichi Ogawa, all of Katsuta, Japan, assignors to Hitachi Koki Company, Limited, Tokyo, Japan

Filed Nov. 19, 1984, Ser. No. 673,059

Claims priority, application Japan, Aug. 31, 1984, 59-183372

Int. Cl.[4] H02J *7/04*

U.S. Cl. 320—32 **12 Claims**

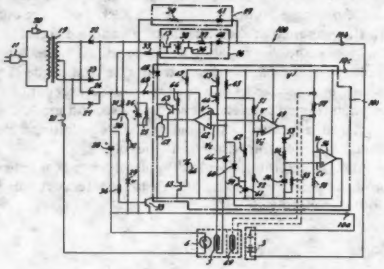
1. A circuit arrangement for rapidly charging a battery, comprising:

(a) first means for detecting the voltage of said battery to be

charged and producing a signal indicating the relationship between said voltage and a predetermined voltage;

(b) a constant-current charging circuit responsive to said signal from said first means for supplying said battery with a constant-current from a d.c. power source until said voltage reaches said predetermined voltage;

(c) a constant-voltage charging circuit responsive to said signal from said first means for supplying said battery with a constant voltage from said d.c. power source for a predetermined period of time; and



(d) a timer means responsive to said signal from said first means for providing said predetermined period of time to said constant-voltage charging circuit, said timer means including:

a first comaprator responsive to said voltage and a first reference voltage;

a capacitor responsive to said first comparator so as to be charged when said voltage is below said first reference voltage and is discharged when said voltage exceeds said first reference voltage; and

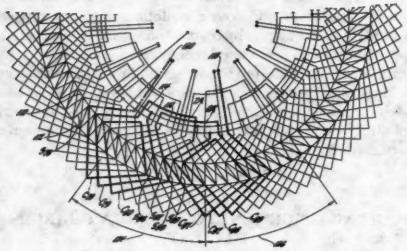
a second comparator responsive to a voltage across said capacitor and a second reference voltage.

4,609,862

TWIN WINDING THREE-PHASE ALTERNATOR WITH ZERO SLOT COUPLING

Robert W. Becker, Warrenville; Timothy A. Keck, Montgomery, and John E. Madsen, Lemont, all of Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 9, 1985, Ser. No. 774,082
Int. Cl.[4] H02K *3/00*; H02P *9/00*
U.S. Cl. 322—90 **3 Claims**



1. A three-phase electric alternator including a P-pole rotor, a stator having 3nP slots and 3nP stator coils disposed therein in overlapping relation to form P groups of three-phase coils, where n is an integer greater than or equal to 2, each such group of three-phase coils comprise three groups of n successively wound single-phase coils, said coils being connected to define two electrically separate sets of three-phase windings for supplying three-phase alternating current to diversely controlled electrical loads, each such set of three-phase windings comprising a group of interconnected winding components for each phase, and each such interconnected winding component comprising n serially connected stator coils, the improvement wherein:

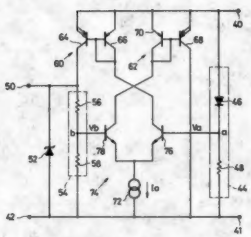
the stator coils each span an odd number of stator slots, and the stator coils are connected such that circumferentially adjacent stator coils are connected in different of the sets of three-phase windings, and such that each of the interconnected winding components of a given set of three-phase windings comprises INT(n/2) coil(s) from one group of three-phase coils and n-INT(n/2) like phase coils from a different group of three-phase coils, whereby the stator coils disposed in any stator slot are connected in only one of the sets of three-phase windings, and magnetic coupling between the sets of three-phase windings due to stator slot leakage is avoided.

4,609,863

POWER SUPPLY PROVIDING STABILIZED DC FROM AN INPUT VOLTAGE OF AC SUPERPOSED ON DC WITHOUT DISTURBING THE INPUT VOLTAGE

Kachio Asai, Uji, and Yuji Tsuruga, Mitaka, both of Japan, assignors to Iwatsu Electric Co., Ltd. and Rohm Company Limited, both of, Japan

Filed Oct. 18, 1984, Ser. No. 661,994
Claims priority, application Japan, Oct. 25, 1983, 58-200475
Int. Cl.[4] G05F *5/00*
U.S. Cl. 323—223 **6 Claims**



1. In a power supply device having an input voltage terminal, an output voltage terminal and a ground terminal, an input voltage fed to the device between the input voltage and ground terminals and an output voltage generated between the output voltage and ground terminals, the power supply device comprising:

a constant current source for generating a constant current;

a voltage regulating element interposed between the output voltage and ground terminals, the voltage regulating element having a first end connected to the output voltage terminal and a second end connected to the ground terminal;

a first constant-current circuit electrically connected to the voltage-regulating element for supplying the constant current thereto;

a second constant-current circuit electrically connected to the ground terminal for feeding the constant current thereto;

a current switching circuit interposed between and electrically connected to the first and second constant-current circuits, the current switching circuit further connecting electrically to the constant-current source; wherein the current switching circuit compares the input voltage to the output voltage for initiating the first constant-current circuit to supply the constant current to the voltage-regulating element when the input voltage is greater than the output voltage and for initiating the second constant-current circuit to supply the constant current to the

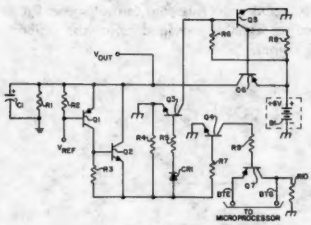
ground terminal when the input voltage is smaller than the output voltage.

4,609,864

ANALOG PROCESS CONTROLLER WITH DIGITAL MONITOR

Karl E. Pommer, II, Huntsville, Ala., assignor to GTE Communication Systems Corp., Northlake, Ill.

Filed Nov. 13, 1984, Ser. No. 670,094
Int. Cl.[4] G05F *1/445*
U.S. Cl. 323—267 10 Claims



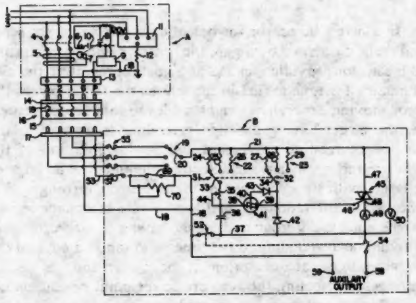
1. An analog controller with digital monitor comprising: a source of DC power; controller output means; gating means connected between said DC power source and said controller output means; a voltage difference detector connected to a reference voltage source and including a feedback connection from said output means, operated in response to the difference between said reference voltage and the voltage of said output means; an analog signal output connected between said detector and said gating means operated in response to said operated detector means to operate said gating means to control the flow of DC voltage from said power source to said controller output means; switching means including circuit connections to an associated digital processor; a digital signal output connected between said detector and said switching means operated in response to said operated detector means to condition said switching means to transmit an enabling signal to a connected digital processor, said enabling signal transmitted in response to an enabling signal from said digital processor supplied to said conditioned switching means.

4,609,865

GROUNDING SYSTEM TEST APPARATUS

Paul R. Goodman, 4313 Lake Ridge Dr., Raleigh, N.C. 27604, and Francis P. Weinheimer, 501-TA Oaklynn Ct., Pittsburgh, Pa. 15220

Filed Dec. 14, 1983, Ser. No. 560,907
Int. Cl.[4] G01R *31/02*
U.S. Cl. 324—51 6 Claims



1. Test apparatus for a polyphase circuit-breaker-protected alternating current power system having its neutral conductor connected to ground through a resistor comprising solid state switching means powered by a phase votage of said system for generating a low voltage system frequency test current, overload protected means for introducing said test current into said system, and means for adjusting said test current through said ground resistor to a predetermined value, said means comprising a timing capacitor connected between said ground connector and an adjustable resistor, a silicon bilateral switch having two terminals and a gate connected between the junction of said timing capacitor and said adjustable resistor and the gate of said solid state switching means, means connecting the other end of said adjustable resistor with said selected phase conductor, means connecting the gate of said silicon bilateral switch with said selected phase conductor and means connected to said timing capacitor for applying to it a voltage which drops below the voltage on said capacitor at the end of each voltage cycle whereby said circuit breaker can be caused to trip at said predetermined value of current.

4,609,866

ELECTRICAL SYSTEMS INTERFERENCE LOCATOR

Marvin O. Loftness, 115 W. 20th Ave., Olympia, Wash. 98501

Filed May 7, 1984, Ser. No. 607,443
Int. Cl.[4] G01R *31/08*; H01Q *21/12*
U.S. Cl. 324—52 9 Claims

1. In an electrical systems interference locator in which UHF and VHF noise and/or signals are detected and their sources located, the combination therewith of an antenna including an aft boom section of electrically conductive material having front and rear ends and a forward boom section of electrically non-conductive material having front and rear ends, a UHF driven element and a VHF driven element mounted adjacent the rear end of the aft boom section, a plurality of director elements mounted at spaced intervals along the length of the aft and forward boom sections, and coupler means for releasably connecting the front end of the aft boom section and the rear end of the forward boom section together in longitudinal extension.

7. An electrical systems interference locator, comprising:

(a) an antenna including a UHF driven element and a VHF driven element,

(b) RF preamplifier means having an input connected to both UHF and VHF driven elements for amplifying the noise and/or signals received thereby, and an output connected to RF attenuator means,

(c) a field strength meter having an RF input and an audio frequency output,

(d) means for coupling the output of the RF attenuator means to the RF input of the field strength meter,

(e) audio amplifier means having an output connected to a speaker, and

(f) means for coupling the audio output of the field strength meter to the input of the audio amplifier means.

4,609,867

METHOD FOR MEASURING ELECTRICAL POTENTIALS AT BURIED SOLID STATE MATTER

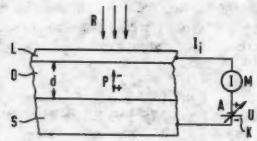
Helmut Schink, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 14, 1983, Ser. No. 513,763

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1982, 3235100

Int. Cl.[4] G01R *31/26*

U.S. Cl. 324—158 D 2 Claims



1. A method for measuring electrical potentials at solid state matter which is separated from a surface by at least one conductive layer and at least one insulating layer, comprising the steps of:

directing an ionizing beam against a measuring point at the surface to produce a conductive connection between the measuring point at the surface and a measuring point at the solid state matter and establishing potential between the conductive layer at the solid state matter;

contemporaneously inducing and measuring specimen current by the application of the ionizing beam; and

measuring the electrical potential of the measuring location on the solid state matter in response to the measured specimen current which is linearly dependent on the difference in potential between the conductive layer and the measuring location on the solid state substance.

4,609,868

CIRCUIT FOR DETECTING THE FAILURE OF A STEP MOTOR TO RESPOND TO ENERGIZATION COMMANDS

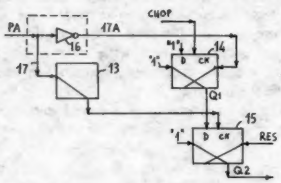
Gianpietro Ferrari, Milan, Italy, assignor to Honeywell Information Systems Italia, Milan, Italy

Filed Jun. 25, 1984, Ser. No. 624,158

Claims priority, application Italy, Jul. 15, 1983, 22097 A/83

Int. Cl.[4] G01R *31/02*

U.S. Cl. 324—158 MG 2 Claims



1. A circuit for detecting the failure of a step motor to respond to energization commands, the motor having phases each energizeable by a current in response to an energization command, the motor being controlled by a control system comprising means for selectively generating phase energization command, means for detecting the energization current flowing within the energized phases and for supplying a current signal when such current reaches a prefixed value, characterized in that the circuit comprises:

timing means activated at the beginning of the energization commands of a first phase at least, for periodically generating a timing signal with a preestablished delay as to said beginning of each of the energization commands of said first phase,

first bistable means set by said current signal and reset by a command (phase energization command included) emitted by said control system, for providing, when set, an output signal indicating that the energization current has reached said prefixed value, and

detecting means receiving said output signal for detecting if said output signal is provided before the generation of said timing signal.

4,609,869

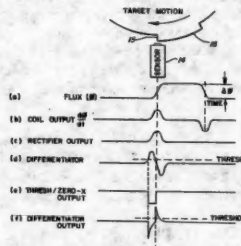
MAGNETIC SENSOR AND CIRCUIT FOR DETECTING THE EDGE OF A TARGET AS IT PASSES THE CENTERLINE OF THE SENSOR

Wilbur F. Metcalf, Sarasota, Fla., assignor to Electro Corporation, Sarasota, Fla.

Filed Apr. 13, 1983, Ser. No. 485,225

Int. Cl.[4] G01B *7/14;* H03K *5/53*

U.S. Cl. 324—208 9 Claims



1. In a magnetic sensor for detecting a ferrous target separated from the sensor by a gap, the sensor having a centerline and means for providing an analog signal representing the rate of change of magnetic flux in the gap as the target passes the sensor moving generally at right angles to said sensor centerline, the target having an edge extending transverse to the direction of relative movement and in the direction of the sensor centerline, means for detecting alignment of an edge of the target with the centerline of the sensor comprising:

means for differentiating said analog rate of change signal, the analog differentiated signal having a zero crossover point corresponding to the time at which said edge of the target passes the centerline of the sensor; and

means for detecting the zero crossover point of said analog differentiated signal to provide an output signal which corresponds to the time at which the target edge is coincident with the centerline of the sensor.

4,609,870

LIFT OFF COMPENSATION OF EDDY CURRENT CRACK DETECTION SYSTEM BY CONTROLLING DAMPING RESISTANCE OF OSCILLATOR

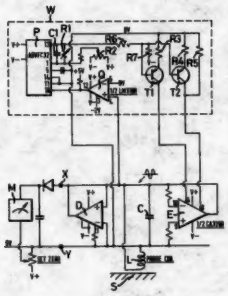
Peter G. Lale, Harpenden, and Donald H. Hocking, St. Albans, both of United Kingdom, assignors to Hocking Electronics Limited, Hertsfordshire, England

Continuation-in-part of Ser. No. 358,575, Mar. 16, 1982, abandoned. This application Sep. 13, 1984, Ser. No. 650,667

Claims priority, application United Kingdom, Mar. 27, 1981, 8109704

Int. Cl.[4] G01N *27/72, 27/82;* **G01R** *33/12*

U.S. Cl. 324—225 **9 Claims**



1. An eddy current crack detection system comprising an inductive probe coil forming part of an oscillatory circuit and a measuring device arranged to monitor the amplitude of the oscillating voltage across the probe coil whereby to detect cracks, characterised in that in order to substantially nullify the effect of lift-off on the amplitude of said voltage there is provided a variable electrical resistance in the oscillatory circuit and control means responsive to the instantaneous magnitude of lift-off to provide a control signal for continuously varying the value of said resistance and hence the amount of damping in the oscillatory circuit so that the ampliltude of said voltage does not vary substantially with lift-off.

4,609,871

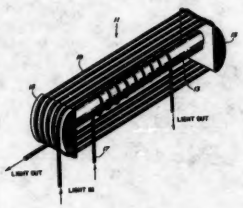
TEMPERATURE COMPENSATED OPTICAL FIBER INTERFEROMETRIC MAGNETOMETER

Lloyd C. Bobb, Willow Grove, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 2, 1984, Ser. No. 627,306

Int. Cl.[4] G01R *33/032;* **G02F** *1/09*

U.S. Cl. 324—244 **7 Claims**



1. An interferometric device for measuring the strength of a magnetic field independent of variations in ambient temperature, comprising:

a source of coherent light signals;

means, optically coupled to said source, for splitting the light signals therefrom into two subsignals of equal amplitude, frequency, and phase;

a magnetostrictive rod adapted to be sensitive to variations only in the magnetic field component along its length;

a first optical fiber coiled and bonded contiguously and transversely about said rod, and optically coupled at one end to receive one subsignal from said splitting means;

two convex caps, each attached to the ends of said rod;

a second optical fiber coiled and bonded contiguously about said caps in a direction along the longitudinal axis of said rod, and optically coupled at one end to receive the second subsignal from said splitting means;

means, optically coupled to the other end of said first and second fiber, for recombining the subsignals therefrom into a signal the intensity of which varies in proportion to the magnetic field of interest;

photodetector means, optically coupled to said recombining means, for receiving the recombined signal and converting it into a substantially equivalent electrical signal; and

processing means, connected to said photodetector means, for determining the strength of the magnetic field.

4,609,872

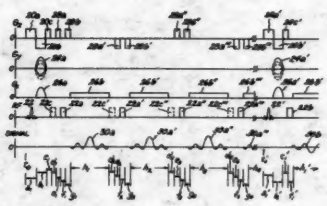
NMR MULTIPLE-ECHO PHASE-CONTRAST BLOOD FLOW IMAGING

Matthew O'Donnell, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 10, 1984, Ser. No. 639,567

Int. Cl.[4] G01R *33/20*

U.S. Cl. 324—306 **21 Claims**



1. A method for magnetic resonance imaging of fluid flow in a sample, comprising the steps of:

(a) immersing the sample in a static magnetic field disposed in a first direction;

(b) applying a first sequence of magnetic field gradients and radio-frequency signals to the sample to both define a slab, of the sample to be imaged, in a plane substantially orthogonal to a selected direction for which flow velocity is to be measured, and to obtain a plurality N of spin-echo response signals from that slab;

(c) processing the plurality of first sequence spin-echo signals to obtain a complex value $A_1(X,Y,Z)$ relating both the spin density $\rho'(X,Y,Z)$, . . . and the phase rotation $\phi(X,Y,Z)$, induced by the first sequence, for each of a selected number of sequential locations (X,Y,Z) in the sample slab;

(d) applying a second sequence of magnetic field gradient and radio-frequency signals to both define the same sample slab as in step (b) and to obtain another plurality N of spin-echo response signals from that slab;

(e) including a waveform in at least one of the magnetic field gradient and radio-frequency signals applied in step (d) for imparting to each of the spin-echo signal components from each slab location having a flowing material therein a phase rotation dependent upon the magnitude of the flow velocity therein in the selected direction;

(f) processing the plurality of second sequence spin-echo signals to obtain a complex value $A_2(X,Y,Z)$ relating the spin density $\rho'(X,Y,Z)$ and the imparted phase rotation of

the sample material along the selected flow measurement direction for each of the sequential locations (X,Y,Z) in the sample slab; and

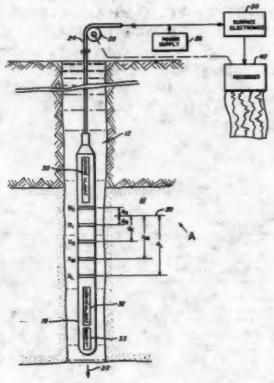
(g) processing the complex values $A_1(X,Y,Z)$ and $A_2(X-,Y,Z)$ for each sample location to obtain a differential phase-contrast value related to the velocity of the flowing material therein in the selected measurement direction.

4,609,873

DIELECTRIC WELL LOGGING SYSTEM WITH AT LEAST THREE TRANSMITTER COILS AND AT LEAST TWO RECEIVER COILS FOR DETERMINING RESISTIVITY AND DIELECTRIC CONSTANT OF A SUBSURFACE FORMATION ADJACENT A FLUID INVADED ZONE OF THE FORMATION

Percy T. Cox; Richard A. Meador, both of Houston; Roland G. Riedesel, Jr., Austin, and Kerry D. Savage, Houston, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 4, 1980, Ser. No. 109,691
Int. Cl.[4] G01V *3/30, 3/38;* G08C *15/06*
U.S. Cl. 324—338 **22 Claims**



1. A dielectric well logging apparatus for obtaining a plurality of amplitude ratios and phase differences between electromagnetic wave energy signals which have passed different distances through a subsurface formation adjecent a well borehole, so that an analyst may determine resistivity and dielectric constants for the different distances of travel through the formation comprising:

(a) sonde means for moving through the well borehole;

(b) at least three transmitter coils for emitting radio frequency energy into the formation at different depths in the borehole, said coils being spaced from each other in said sonde means for disposition at different depths in the borehole;

(c) control means for controlling the activation of said transmitter coils;

(d) a plurality of receiver coils for receiving energy from said transmitter coils after passage through the formation and borehole, said receiver coils being spaced from each other and from said transmitter coils in the sonde for disposition at different depths in the borehole;

(e) said receiver coils forming in groups of two different transmitter-receiver pairs, differently spaced from the other transmitter receiver pairs, with each of said transmitter coils;

(f) receiver circuit means for forming signals representing the electromagnetic wave energy received in said receiver coils; and

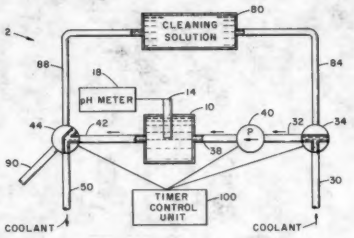
(g) processing circuit means for forming output signals representative of the phase difference and amplitude ratio for each of said different transmitter-receiver pairs so that the analyst may determine the resistivity and dielectric constants for the different distances of travel to determine if fluid invasion is present in the formation.

4,609,874

SYSTEM FOR MONITORING PH IN OIL IN WATER LIQUIDS

Ronald A. Reich, Aspinwall, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 11, 1984, Ser. No. 569,968
Int. Cl.[4] G01N *27/56*
U.S. Cl. 324—438 **18 Claims**



8. Apparatus for monitoring the pH of a coolant employed in rolling metal in a rolling mill comprising:

(a) pH meter means for measuring pH of said coolant;

(b) conduit means for directing said coolant to and from said meter means;

(c) valve means located in series with said meter means;

(d) pump means located in series with said meter means and valve means;

(e) a reservoir of washing solution connected in fluid communication with said valve means and in a fluid circuit that is parallel with said meter means and pump means;

(f) means for controlling the valve means to interrupt the flow of coolant to said meter means and to direct the washing solution to and through said meter means; and

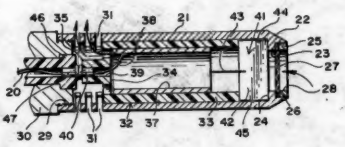
(g) means for discharging said washing solution from said meter means prior to resuming the flow of coolant to said meter means, said discharge means being capable of also discharging said coolant from said meter means if desired.

4,609,875

CORONA DISCHARGE FREON GAS SENSOR HAVING ELECTRICAL WIND PUMPING ACTION

Edward A. Jeffers, 1010 E. 31st St., Hialeah, Fla. 33013

Filed Aug. 26, 1983, Ser. No. 526,613
Int. Cl.[4] G01N *27/60*
U.S. Cl. 324—455 **8 Claims**



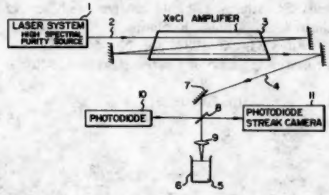
2. In a negative corona discharge halogan gas detector of the type having cathode and anode electrodes, an electrical potential applied to the electrodes to establish a corona discharge therebetween in the continuous corona region, and means for measuring changes in the corona current as an indication of

halogen gas contamination in an air sample being detected or sensed, the combination comprising; a sharply pointed cathode electrode, an anode electrode spaced from said cathode electrode to define therewith a corona gap wherein said cathode will be highly electrically stressed to produce a corona discharge, said anode comprising a two-ended enclosure open at each end, means for constraining therethrough the flow of atmospheric air to be sensed along the path of ionic flow from said cathode in the corona discharge, said ionic flow, by virtue of the "ion wind" effect, serving to produce a continuous flow or "pumping action" of the atmosperic air being sensed through said enclosure for halogen gas contamination.

4,609,876
SHORT RADIATION PULSE GENERATION

Orson L. Bourne, Vanier, and A. John Alcock, Gloucester, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Apr. 26, 1984, Ser. No. 604,120
Int. Cl.⁴ H01S 3/30
U.S. Cl. 330—4.3 **18 Claims**



1. A pulse generating apparatus for generating a short laser pulse comprising:

generating means for generating an input laser pulse having an intensity to produce stimulated Brillouin scattering in a scattering medium,

transmitting means for transmitting the said input radiation pulse toward the said medium in a direction such as to cause a backscatter from the medium as the result of stimulated Brillouin scattering,

focussing means for focussing the said input radiation pulse at a loation substantially coinciding with a surface of the said medium to increase the intensity of the said input laser pulse to such an extent that laser-induced breakdown occurs near the said surface, thus truncating the stimulated Brillouin scattering, and

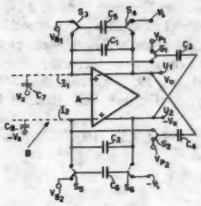
directing means for directing the backscattered pulse away from the medium, which backscattered pulse has a shorter duration than the input laser pulse.

4,609,877
BUFFER CIRCUIT WITH DIFFERENTIAL STRUCTURE FOR MEASUREMENT OF CAPACITIVE CHARGES

Germano Nicollini, Piacenza, Italy; Daniel Senderowicz, Berkeley, Calif., and Pierangelo Confalonieri, Canonica d'Adda, Italy, assignors to SGS Microelettronica S.p.A., Catania, Italy

Filed Nov. 7, 1985, Ser. No. 795,834
Claims priority, application Italy, Nov. 12, 1984, 23531 A/84
Int. Cl.⁴ H03F 3/45
U.S. Cl. 330—9 **3 Claims**

1. Buffer circuit with differential structure for measurement of capacitive charges comprising an operational amplifier with two inputs, two outputs and a pair of feedback capacitances between said outputs and the corresponding inputs characterized in that it comprises another pair of capacitances the same as said feedback capacitances and commutating devices for connecting alternatively each of said other capacitances between a respective output of the amplifier and a polarization

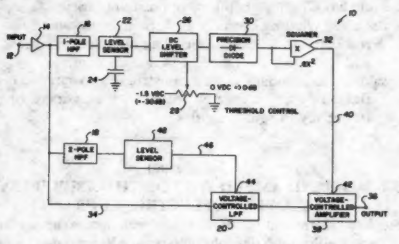


potential or between said amplifier output and the input corresponding to the other output.

4,609,878
NOISE REDUCTION SYSTEM

Robert L. Rodgers, Dallas, Tex., assignor to Circuit Research Labs, Inc., Tempe, Ariz.

Continuation of Ser. No. 460,319, Jan. 24, 1983, abandoned. This application Jul. 31, 1985, Ser. No. 761,656
Int. Cl.⁴ H03G 9/02
U.S. Cl. 330—136 **19 Claims**



8. A noise reduction system comprising in combination;

an input terminal for receiving an electrical signal;

an output terminal;

a signal path between the input and output terminals for transmitting a signal representative of the electrical signal;

variable amplification means interposed in the signal path for amplifying the electrical signal responsively to a control signal;

a first control path between the input terminal and the amplification means for providing the control signal to the amplification means;

means interposed in the first control path for providing an output signal which is its input signal raised to at least the second power and multiplied by a constant;

filter means interposed in the signal path for rejecting frequencies outside a bandwidth which is variably responsive to a control signal; and

a second control path between the input terminal and the filter means for providing the control signal to the filter means.

4,609,879

CIRCUITRY FOR A SELECTIVE PUSH-PULL AMPLIFIER

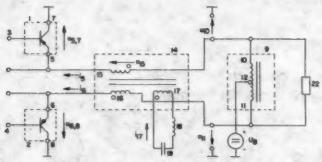
Gerhard Flachenecker, Bozener Strasse 2 De, D8012 Ottobrun; Karl Fastenmeier, Lutzelsteiner Strasse 7b, D-8000, Munich 45, and Heinz Linenmeier, Furstenrei-er Strasse 7, D-8033 Planegg, all of Fed. Rep. of Germany

Filed Jul. 19, 1983, Ser. No. 515,292

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1982, 3227109

Int. Cl.[4] H03F 3/26

U.S. Cl. 330—276 11 Claims



1. A circuit for a selective push-pull amplifier comprising;
two amplifier triple poles having the same operating voltage polarity, said two amplifier triple poles each having a control electrode and an output electrode;
said control electrodes being controlled by out of phase control voltages;
an output inductance having a pair of terminals at each end and a center tap for producing a magnetic combination of output currents of said two amplifier triple poles;
a transformer connected between the output electrodes of said amplifier triple poles and said pair of terminals of said output inductance;
said transformer having three windings with two windings each being connected in series between said amplifier triple pole output electrodes and said pair of terminals of said output inductance;
said two windings being of opposite polarity;
the third winding of said transformer being wired in a series resonant circuit comprised of an inductance, a capacitance and leakage inductance of said transformer;
said series resonant circuit constructed to have a resonant frequency approximately equal to the average operating frequency of said amplifier.

4,609,880

BROAD-BAND AMPLIFIER FOR THE AMPLIFICATION OF A PHOTOELECTRIC CURRENT

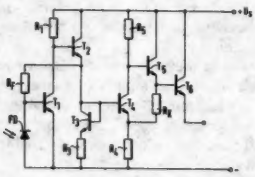
Stephan Dermitzakis, Heilbronn-Neckargartach; Jasbeer S. Suri, Heilbronn-Klingenberg; Gerhard Krumrein, Neuenstadt, and Peter Mischel, Heilbronn, all of Fed. Rep. of Germany, assignors to Telefunken electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Sep. 28, 1984, Ser. No. 655,724

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1983, 3336366

Int. Cl.[4] H03F 3/08

U.S. Cl. 330—308 12 Claims



1. A broad-band amplifier for the amplification of a photoelectric current triggered by a light signal with a first transistor connected to receive the photoelectric current, and a second transistor connected in series with the first transistor, wherein a resistance is connected between the base of the first transistor and the emitter of the second transistor, and a third transistor and a fourth transistor are provided which form a current mirror, in that the third transistor is connected in series with the second transistor, and a resistance is located between the third transistor and ground.

4,609,881

FREQUENCY SYNTHESIZERS

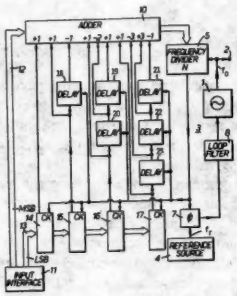
John N. Wells, St. Albans, England, assignor to Marconi Instruments Limited, St. Albans, England

Filed May 3, 1984, Ser. No. 607,398

Claims priority, application United Kingdom, May 17, 1983, 8313617

Int. Cl.[4] H03L 7/00

U.S. Cl. 331—1 A 15 Claims



1. A frequency synthesizer comprising
a variable frequency oscillator;
a frequency divider having an input coupled to the output of said variable frequency oscillator, said frequency divider having a variable integer divisor value;
a phase comparator having a first input coupled to a reference frequency source and a second input coupled to the output of said frequency divider, the output of said phase comparator being coupled to said variable frequency oscillator to control the frequency thereof in accordance with the outputs of said reference frequency source and said frequency divider; and
means coupled to said frequency divider and responsive to a given fractional divisor value for periodically altering said divisor value by a predetermined integer amount so that said frequency divider has an effective divisor which corresponds to said fractional divisor value, said means periodically altering said divisor value in accordance with a plurality of predetermined sequences which represent successive rows in Pascal's triangle, the terms of which all sum to zero so as to offset phase differences present at said phase comparator and which result from the alteration of said divisor value by said predetermined integer amount.

4,609,882

OSCILLATOR/DEMODULATOR CIRCUIT ARRANGEMENT FOR AN INDUCTIVE PROXIMITY SWITCH

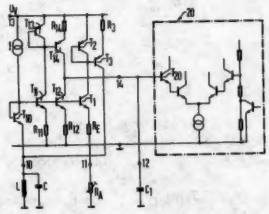
Gerhard Gehring, Unterhaching, and Franz Hödlmayr, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 12, 1985, Ser. No. 754,869

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1984, 3425937

Int. Cl.[4] G01V *3/11;* H03B *5/12*

U.S. Cl. 331—65 12 Claims



1. Oscillator/demodulator circuit arrangement for an inductive proximity switch with a transistor amplifier stage having an input circuit containing an attenuatable resonance circuit and having an output circuit, with a regenerative feedback from the output circuit to the input circuit of the transistor amplifier stage, the input circuit of the transistor amplifier stage having a limiter branch therein, comprising a double current mirror operatively connected in the input circuit of the transistor amplifier stage and including a first and a second current mirror coupled to one another in a manner that currents supplied thereby are subtracted from one another at a circuit output, the transistors in said second current mirror having a larger emitter surface ratio in comparison with the emitter surface ratio of the transistors in said first current mirror.

4,609,883

MICROWAVE OSCILLATOR HERMETICALLY SEALED AND COUPLED TO DIELECTRIC RESONATOR

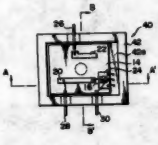
Motoo Mizumura, and Kenzo Wada, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 27, 1984, Ser. No. 644,286

Claims priority, application Japan, Aug. 30, 1983, 58-158414

Int. Cl.[4] H03B *5/18, 7/14*

U.S. Cl. 331—96 8 Claims



1. A microwave oscillator using a semiconductor active element chip for oscillation having a dielectric resonator electromagnetically coupled thereto to stabilize oscillation, said microwave oscillator comprising:

a housing having an internal space defined by a plurality of walls;

a dielectric substrate mounted within said housing and cooperating with predetermined ones of the walls of the housing to divide said internal space into first and second compartments, said first compartments being air tight;

the semiconductor active element chip mounted on said dielectric substrate within said first compartment and the dielectric resonator mounted on said dielectric substrate within the second compartment;

means for electromagnetically coupling said dielectric resonator to said semiconductor active element chip, and

oscillation frequency adjusting means arranged in the second compartment in an adjustable positional relationship to the dielectric resonator for adjusting the oscillation frequency.

4,609,884

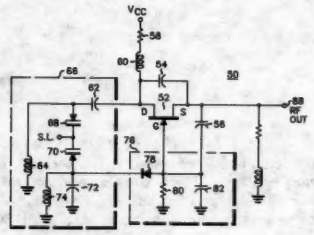
LEVEL CONTROL FOR A VOLTAGE CONTROLLED OSCILLATOR

Peter A. Kindinger, Lake in the Hills, and Einar A. Eriksson, Oak Park, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 6, 1985, Ser. No. 731,205

Int. Cl.[4] H03B *5/12;* H03L *5/00*

U.S. Cl. 331—109 4 Claims



1. A method of controlling the magnitude of an output signal produced by a voltage controlled oscillator circuit comprised of an active device and capacitive and inductive elements forming a frequency determining means having a voltage control input port for receiving a steering signal, comprising the steps of:

(a) detecting a radio frequency potential at a node in the circuit that varies inversely proportional to the steering signal;

(b) rectifying said radio frequency potential to provide a control signal;

(c) controlling the active device with said control signal to vary the magnitude of the output signal.

4,609,885

DEVICE PROVIDING COMPENSATION FOR ACCELERATION SENSITIVITY OF AN OSCILLATOR

Patrick Renoult, Paris, France, assignor to Compagnie d'Electronique et de Piezo-Electricite C.E.P.E., Argenteuil, France

Filed Nov. 13, 1984, Ser. No. 670,578

Claims priority, application France, Nov. 15, 1983, 83 18130

Int. Cl.[4] H03B *5/04*

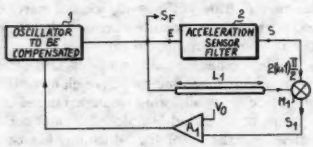
U.S. Cl. 331—158 10 Claims

1. A device for providing compensation for the acceleration sensitivity of an osicllator outputting a first signal of nominal frequency, wherein said device comprises:

a sensing element receiving said output of said oscillator and providing a second signal of nominal frequency wherein said second signal has a frequency equal to said first signal

and wherein the acceleration sensitivity of said sensing element is at least twice the acceleration sensitivity of said oscillator to be compensated;

a comparator for comparing the phase difference between the frequency of said first signal and the frequency of said second signal in order to output a phase modulation induced by acceleration; and



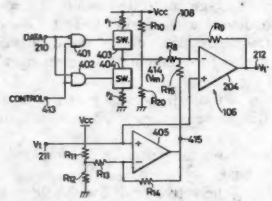
a follow-up control device for receiving the output signal of said phase comparator and for producing and oscillator correction signal which is fed to said oscillator to be compensated whereby said sensing element, said comparator and said follow-up control device provide a negative-feedback loop of said oscillator to be compensated and whereby said correction signal modifies the phase of said negative-feedback loop.

4,609,886

PLL MODULATION CIRCUIT

Hisashi Takaki, and Fumio Matsushita, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 25, 1985, Ser. No. 715,308
Claims priority, application Japan, Mar. 23, 1984, 59-56931
Int. Cl.[4] H03C *3/00*
U.S. Cl. 332—19 **5 Claims**



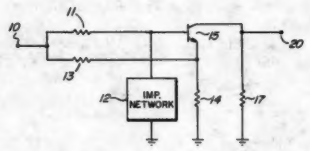
1. A phase-locked loop modulation circuit comprising: level converting means for converting a logic signal into a signal having substantially equal levels above and below a predetermined voltage, said level converting means comprising a pair of voltage dividing resistors for dividing a supply voltage and a pair of series circuits each of a resistor and a switch element connected in series, each of said series circuits being connected in parallel to a respective one of said resistors of said pair of voltage dividing resistors, and means for complementarily operating said switch elements on and off according to said logic signal; a voltage-controlled oscillator; and means for superposing said signal having substantially equal levels on a control voltage of said voltage-controlled oscillator so that an output of said voltage-controlled oscillator is subjected to angular modulation.

4,609,887

DELAY EQUALIZER

Güner Taralp, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 19, 1984, Ser. No. 602,209
Int. Cl.[4] H03H *11/26*
U.S. Cl. 333—28 R **11 Claims**



1. A delay equalizer comprising:

an input for a signal to be equalized;

amplifier means having first and second differential inputs and an output for an equalized signal;

first impedance means coupled between the input and the first differential input;

second impedance means coupled between the first differential input and a point of reference potential;

third impedance means coupled between the input and the second differential input; and

fourth impedance means coupled between the second differential input and the point of reference potential;

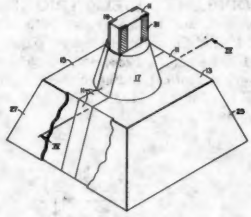
the second impedance means comprising a frequency-dependent network comprising at least one resonant circuit, and the first and third impedance means each comprising a resistive impedance.

4,609,888

DIRECTION FINDING ANTENNA INTERFACE

Robert G. Corzine, and Joseph A. Mosko, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 2, 1980, Ser. No. 193,567
Int. Cl.[4] H03H *7/38;* H01Q *9/27*
U.S. Cl. 333—34 **11 Claims**



1. A direction finding antenna interface for receiving, impedance transforming, and transmitting signals to an arithmetic network comprising:

antenna means having a plurality of arms for receiving signals;

a stripline feed circuit/transformer connected between the antenna means and the arithmetic network for impedance optimization of the different radiation modes by controlling the widths, lengths, and the spacings of the striplines; and

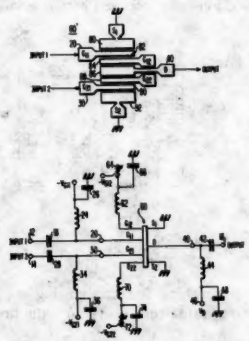
stripline feed circuit/transformer support means connected to the antenna means for fixedly holding the stripline feed circuit/transformer between the antenna means and the arithmetic network.

4,609,889

MICROWAVE FREQUENCY POWER COMBINER

Mahesh Kumar, S. Brunswick Township, Middlesex County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jul. 13, 1984, Ser. No. 630,839
Int. Cl.[4] H03H 11/36
U.S. Cl. 333—100 1 Claim



1. A radio frequency signal power combiner comprising; in combination:

a double field-effect transistor (FET) comprising a common drain, first and second source electrodes, and first, second, third and fourth gate electrodes; said first and second gate electrodes for receiving signals of powers P1 and P2 respectively to be combined in power, said drain electrode being responsive to said input powers for generating output power P, said FET having means for receiving gate-source bias and drain-source bias of values such that, when said gate-source bias and drain-source bias are present P is at least equal to P1 plus P2;

means providing adjustable gate-source bias to said third and fourth gate electrodes for determining, by the amount of gate-source bias applied to each electrode, the fraction that P1 is to P and that P2 is to P,

said first gate and third gate electrodes being positioned between said common drain and first source, said second gate electrode and fourth gate electrode being positioned between said common drain and said second source, said third and fourth gate electrodes being relatively nearer to said common drain, said first and second gate electrodes being relatively nearer to said first source and second source electrodes, respectively; and

a gallium arsenide substrate, said electrodes being on one side of said gallium arsenide substrate.

4,609,890

BULK ACOUSTIC WAVE SIGNAL PROCESSING DEVICES

Daniel E. Oates, 302 Payson Rd., Belmont, Mass. 02178, and Peter V. Wright, 5902 Preston Oaks Rd. Apt. 1040, Dallas, Tex. 75240

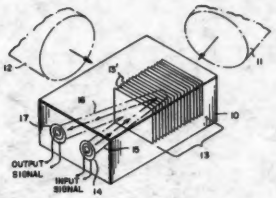
Filed Oct. 29, 1984, Ser. No. 666,044
Int. Cl.[4] H03H 9/54, 9/15, 9/24
U.S. Cl. 333—187 23 Claims

1. An acoustic wave signal processing device comprising

a crystal substrate capable of having bulk acoustic wave signals propagated through the interior thereof;

transducer means mounted on at least one selected surface of said crystal substrate for producing and receiving bulk acoustic wave signals which are propagated through the interior of said crystal substrate; and

a portion of the interior of said substrate having a plurality of generally spatially periodic regions formed therein said regions being formed so that the acoustic impedance characteristics of said regions vary spatially in a periodic fashion from region to region such that a bulk acoustic



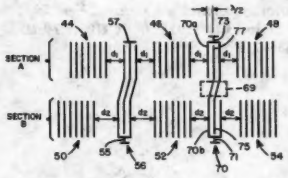
wave signal transmitted through said regions interacts differently with each of said regions during its transmission through said regions.

4,609,891

STAGGERED SAW RESONATOR FOR DIFFERENTIAL DETECTION

Leland P. Solie, and Hans P. Fredricksen, both of Burnsville, Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Oct. 16, 1985, Ser. No. 788,196
Int. Cl.[4] H03H 9/64
U.S. Cl. 333—195 3 Claims



1. In a staggered surface acoustical wave resonator filter comprising a plurality of channels wherein each channel comprises first, second and third reflector means, input transducer means located intermediate said first and second reflector means at a separation distance which is greater in one of said channels than in the other of said channels and output transducer means located intermediate said second and third reflector means, the improvement wherein said channels are arranged in pairs and said output transducer means is configurated to differentially detect a signal in one of said channels with respect to the other of said channels of each of said pairs of channels.

4,609,892

STRIPLINE FILTER APPARATUS AND METHOD OF MAKING THE SAME

Robert J. Higgins, Jr., Sunrise, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 30, 1985, Ser. No. 781,626
Int. Cl.[4] H01P 1/203, 7/08, 11/00
U.S. Cl. 333—204 15 Claims

1. An improved stripline filter apparatus, comprising in combination:

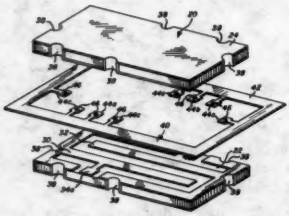
a ceramic substrate base having a metallized ground plane on the outer surface and at least one resonator device on the interior surface thereof, said ground plane having at least a portion thereof extending around the edges to form a border on the interior surface;

a ceramic substrate cover having a metallized ground plane on the outer surface thereof, each ground plane having at

least a portion thereof extending around the edges to form an inner surface border matching said border on said base;

an interconnection arrangement comprising a plurality of leads sandwiched between said base and cover and connected to respective input, output and ground connection points; and

said base and cover being attached to each other by molten solder and wherein cavities in said plurality of leads form reservoirs for accommodating excess solder.



4,609,893

NON-RESONANT MICROWAVE FREQUENCY HALVER

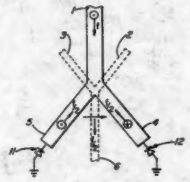
William D. Cornish, Nepean, Canada, assignor to Canadian Department of National Defence, Ottawa, Canada

Filed Oct. 31, 1984, Ser. No. 666,899

Claims priority, application Canada, Feb. 29, 1984, 448510

Int. Cl.[4] H01P *1/20*; H03B *19/05*

U.S. Cl. 333—218 **7 Claims**



1. A microwave frequency divider comprising:

a dielectric substrate with two parallel planar surfaces;

a microstrip line component of conductive material on one of the planar surfaces, the microstrip line component having an input port and two other ports;

a conductive ground plane on the other planar surface;

two varactor diodes with respective first and second terminals, the first terminals being grounded and the second terminals being connected to respective ones of the two other ports of the microstrip line component; and

means for extracting a signal at a frequency f/2 from the microstrip component when a signal at a frequency f is applied to the microstrip component input port, the signal extracting means comprising a slotline in the ground plane havig an output port adjacent the varactor diodes.

4,609,894

TUNING DEVICE

Toshiaki Oguchi, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Sep. 24, 1984, Ser. No. 653,846

Claims priority, application Japan, Sep. 29, 1983, 58-182558

Int. Cl.[4] H03J *1/08*

U.S. Cl. 334—11 **3 Claims**

1. A tuning device comprising:

a frame;

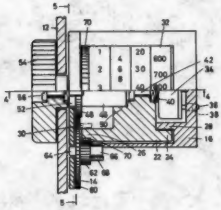
a dial drum, rotatably supported in said frame, said dial drum having characters for tuning and having an outer toothing formed on the periphery thereof;

a rheostat operatively connected to said dial drum;

a knob having the rotational axis thereof in alignment with the rotational axis of said dial drum;

a drive gear co-axially secured to said knob and rotatably supported in said dial drum; and

a gear reduction train disposed between said drive gear and said outer toothing for transmitting the rotation of the drive gear to said drum, said gear reduction train comprising:



a large diameter gear engaged with said drive gear;

a small diameter gear engaged with said large diameter gear and disposed in an integral relationship with said large diameter gear;

whereby the axis of rotation of each gear is parallel to the axis of rotation of said knob.

4,609,895

AUTOMATIC SWITCH WITH INTEGRAL CONTACT INDICATOR

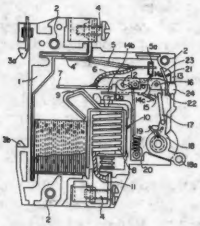
Joseph Westermeyer, Nuremberg, Fed. Rep. of Germany, assignor to Sursum Elektrizitatsgesellschaft Leyhausen GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Oct. 23, 1984, Ser. No. 664,011

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1983, 3339398

Int. Cl.[4] H01H *73/12*, *71/04*

U.S. Cl. 335—17 **4 Claims**



1. An automatic switch with open and closed contact positions, comprising:

a movable contact piece disposed in a housing on one end of a rotatably mounted switch arm, a solenoid adjacent said switch arm for operating said switch arm, said switch-arm bearing a three-armed locking lever;

one arm of said three-armed locking lever having a releasably lockable locking pawl, said locking pawl being rotatably mounted on the other end of said switch arm and connected to a rotatably mounted grip lever via a linking piece;

a grip portion of said grip lever extending out through an opening in a front side of said housing;

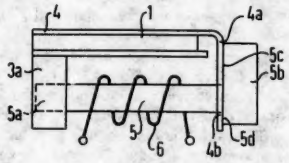
a window being disposed in said front side of said housing near said opening for said grip portion;
a strip having a first region which is disposed behind said window when said switch arm is in a first position;
said first region being disposed beside said window when said switch arm is in a second position;
said window being located near a region of said one end of said switch arm bearing said locking pawl;
said strip having said region being located on said one of said switch arm bearing said locking pawl.

4,609,896

POLARIZED ELECTROMAGNETIC MINIATURE RELAY

Helmut Schedele, Diessen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 18, 1985, Ser. No. 746,125
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1984, 3424464
Int. Cl.⁴ H01H *51/22*
U.S. Cl. 335—80 **6 Claims**



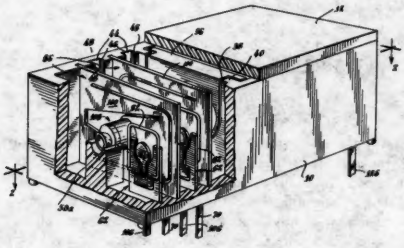
1. A polarized electromagnetic miniature relay comprising an excitation coil, a rod-shaped armature having at least a portion extending within said coil, means for pivotally mounting one end of said armature, a pair of magnetic pole shoes disposed on opposite sides of the free end of said armature, means for oppositely magnetically polarizing said pole shoes by magnetically coupling them with two non-homonymous poles of a quadripole permanent magnet, means connecting the other two poles of said permanent magnet to a flux plate having an aperture for receiving said armature and supporting said armature in pivotal relationship thereto.

4,609,897

MINIATURE RELAY

Heinz DeKoster, Stamford; Oscar Edelman, and Nathan H. Magida, both of Westport, all of Conn., assignors to Thermosen, Incorporated, Stamford, Conn.

Filed Dec. 28, 1984, Ser. No. 687,014
Int. Cl.⁴ H01H *63/02, 67/02*
U.S. Cl. 335—133 **13 Claims**



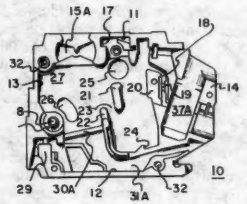
1. A miniaturized electrical relay having high speed switching characteristics at low power comprising:
a housing;
a solenoid enclosed by said housing;
actuating means within said housing longitudinally movable by said solenoid along a first axis between a first and a second position;
a unitary electrically conductive rectangle substantially fixedly mounted in said housing by two opposed edges;
a substantially U-shaped slot piercing said rectangle, the open end of the U being adjacent one of the opposed edges and the base of the U being adjacent the other of the opposed edges, to thereby form an external fixed frame and a yieldable inner member having a base end fixed to said frame and a free distal end;
a substantially V-shaped opening piercing said inner member, the apex of the V being in its base end and the arms of the V terminating in its distal end;
an electrical switching contact carried by said distal end;
a reentrant link extending inwardly of the V from said distal end for connection to said actuating means; and
a fixed contact member retained in said housing and positioned for engagement with said switching contact upon actuation of said inner member to one of its first and second switching positions.

4,609,898

MOLDED CASE CIRCUIT BREAKER HAVING A THERMOPLASTIC COVER

Raymond K. Seymour, Plainville; Roger J. Morgan, Simsbury, and Stephen F. Gillette, Rocky Hill, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Jul. 5, 1985, Ser. No. 751,917
Int. Cl.⁴ H01H *9/02, 13/04*
U.S. Cl. 335—202 **7 Claims**



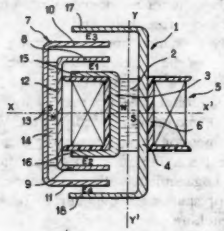
1. An electric circuit breaker comprising:
a molded thermoplastic plastic cover having a first angled arc barrier and a contact blade guide extending perpendicular from a bottom surface;
a molded thermoset plastic case having a complementary second angled arc barrier extending from a bottom surface for abutting said first arc barrier, to define a contact blade slot;
first and second barriers defining a load strap slot integrally formed within said case bottom surface for receiving a load strap in pressfit relation to said slot, said load strap being connected with a magnetic trip unit and a bimetal;
a contact blade pivotally mounted on said base within said contact blade slot and electrically connecting between a movable contact at one end and a fixed contact within said case;
a contact braid connecting an end of said contact blade opposite said movable contact with said bimetal; and
a cradle pivotally mounted on said base for latchably connecting a hooked end with said trip unit, said cradle being arranged intermediate said thermoplastic cover and said contact braid for heat shielding said thermoplastic cover from said contact braid.

4,609,899

POLARIZED ELECTROMAGNET HAVING THREE STATES AND A CONTROL CIRCUIT FOR SAID ELECTROMAGNET

Gérard Koehler, Ville d'Avray, France, assignor to La Telemecanique Electrique, Nanterre, France

Filed Jul. 18, 1985, Ser. No. 756,511
Claims priority, application France, Jul. 20, 1984, 84 11517
Int. Cl.[4] H01F 7/08
U.S. Cl. 335—230 10 Claims



1. A polarized electromagnet comprising at least one excitation coil (5) and a magnetic circuit constituted by two systems (1, 7) each comprising at least one permanent magnet (2, 14) provided with pole pieces (3, 4; 12, 13) on its pole faces, the coil (5) being adapted to surround one of the systems in a region comprising the permanent magnet, said systems (1, 7) being capable of relative displacement between two end positions, the pole pieces (3, 4) of one system (1) being adapted to form with the pole pieces (12, 13) of the other system (7) two oppositely-acting pairs of variable air-gaps (E1, E4; E2, E3), the air-gaps of one pair being adapted to close when the air-gaps of the other pair open by reason of the relative displacement of the systems in a direction which is determined by the state of excitation of the coil (5), the opposite faces of one pair of air-gaps (E1, E4) being joined to pole faces of permanent magnets having the same magnetic polarity, wherein the opposite faces of the other pair of air-gaps (E2, E3) are joined to pole faces of permanent magnets having the same magnetic polarity, and wherein the sizes of the permanent magnets (2, 14) are chosen so as to have the effect, on the one hand, when no excitation is applied to the coil (5), of substantially reducing to zero the flux which passes through a closed air-gap and thus making it possible to restore the systems to an intermediate relative position between the two end positions and on the other hand, when excitation is applied to the coil (5), of producing an attraction towards either of the two end positions according to the direction of excitation of the coil (5).

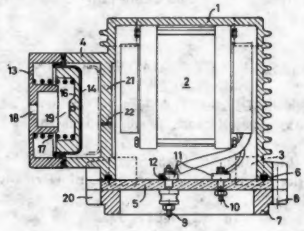
4,609,900

HIGH-VOLTAGE TRANSFORMER WITH LIQUID COOLING

Bruno Bachhofer, Säntisstrasse 85, D-7981 Bavendorf, and Anton Locher, Bergstrasse 6, D-7981 Torkenweiler, both of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 624,707, Jun. 26, 1984, abandoned. This application Jun. 17, 1985, Ser. No. 745,371
Int. Cl.[4] H01F 27/14
U.S. Cl. 336—58 6 Claims

1. A high-voltage, liquid cooled, orientation-independent transformer comprising: a transformer core with at least one winding having a high-voltage end; a hermetically sealed housing enclosing said core, said housing having an installation opening for installation of said core; a mass of cooling and electrical insulating liquid filling said housing and surrounding said core and winding; mechanically expansible compensating means composed of a roll-over membrane attached directly to said housing and communicating with said mass of liquid for permitting expansion of said liquid upon being heated; pressure applying means comprising a spring element acting on said membrane at the side of said membrane directed away from said cooling liquid for subjecting said cooling liquid to a pressure greater than that of the ambient air at all operating temperatures of said transformer; a flat plate of an electrical insulating material covering said installation opening and constituting an insulating lead-through for connection of an external conductor to the high-voltage end of said winding, with said housing being provided with a planar contact face surrounding said installation opening and provided with a circumferential groove; a sealing member disposed in said groove and arranged to contact said plate for normally establishing a sealed joint between said housing and said plate; and screw means fastening said plate to said housing and located for permitting a portion of said plate to deform by flexing elastically when the pressure inside said housing exceeds a selected value, to thereby permit cooling liquid to flow out of said housing.

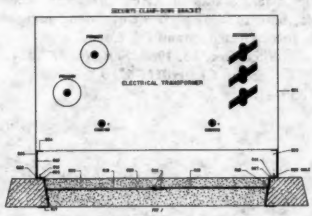


4,609,901

TRANSFORMER CLAMP-DOWN BRACKET

Joseph M. Hamm, 24901 W. North Rd., Lake Villa, Ill. 60046

Filed May 30, 1984, Ser. No. 615,363
Int. Cl.[4] H01F 15/02; F16M 5/00
U.S. Cl. 336—65 10 Claims



1. Apparatus for mounting a transformer to a foundation, said transformer further being coupled to underground power cables, said apparatus comprising:

C-shaped housing means for mounting the transformer;

said foundation having an opening for the power cables, said C-shaped housing means and transformer being disposed on said foundation; and

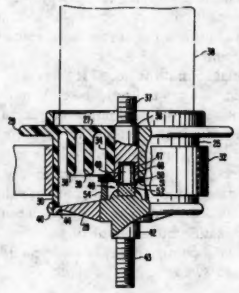
bracket means having a C-shaped portion adapted to engage the side of the opening in the foundation and further having another portion engaging the C-shaped housing means.

4,609,902

ARRESTER SUPPORT AND DISCONNECTOR STRUCTURE

Dennis W. Lenk, Medina, Ohio, assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Oct. 3, 1985, Ser. No. 783,524
Int. Cl.[4] H01H 39/00; H02H 9/06
U.S. Cl. 337—30 11 Claims



1. An arrester support and disconnector structure comprising

a housing of electrical insulating material having upper and lower walls and an interior chamber;

a first electrically conductive member extending through said upper wall, said first member having threaded means at the upper end thereof for electrical and mechanical connection to an arrester;

a second electrically conductive member extending through said lower wall, said second member having means for connection to a ground lead, the upper end of said second member being spaced from the lower end of said first member;

an explosive charge positioned between said first and second members with an air gap between said charge and one of said members;

means in said lower wall defining a frangible, weakened zone surrounding said second member so that detonation of said charge fractures said lower wall at said zone and separates said second conductive member with the ground lead from the remainder of said housing;

means defining a recess around said housing; and

a support band surrounding said housing in said recess for supporting said housing and an arrester thereon.

4,609,903

THIN FILM RESISTOR FOR AN INTEGRATED CIRCUIT SEMICONDUCTOR DEVICE

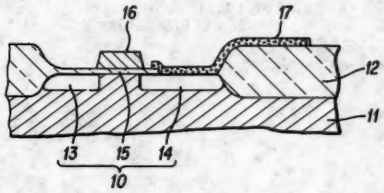
Nobuo Toyokura, Kawasaki; Toyokazu Ohnishi, Isehara, and Naoki Yokoyama, Atsugi, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Oct. 19, 1984, Ser. No. 662,480
Claims priority, application Japan, Oct. 20, 1983, 58-196415
Int. Cl.[4] H01C 7/10, 7/13
U.S. Cl. 338—22 SD 9 Claims

1. A thin film resistor comprising:

an insulative substrate; and

a resistive thin film, formed on the surface of said insulative substrate, said resistive thin film comprising a mixture of silicon nitride (Si_3N_4) and metal particles, said metal particles being dispersed in said silicon nitride and said metal



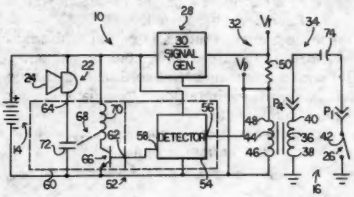
being selected from a group consisting of tungsten, molybdenum and their silicides.

4,609,904

ELECTRICALLY ISOLATED ACTUATION APPARATUS

John C. Paine, Chardon, Ohio, assignor to Caterpillar Industrial Inc., Mentor, Ohio

Filed Jul. 13, 1984, Ser. No. 630,567
Int. Cl.[4] B60Q 1/00; H01H 3/16
U.S. Cl. 340—52 R 4 Claims



1. Apparatus for controllably actuating an electrical signaling device of a vehicle, said vehicle including a chassis, a steering assembly having a steering shaft connected to said chassis, a steering column coaxially positioned about said steering shaft, and a steering wheel rotatably connected to said steering shaft, comprising;

a power supply having positive and negative terminals electrically isolated isolated from said chassis;

a first inductor having first and second terminals, said first terminal being connected to said steering shaft and said first inductor being coaxially mounted on said steering shaft;

a switch connected between said chassis and said first inductor second terminal and being carried on and rotatable with said steering wheel;

a second inductor having third and fourth terminals, said third terminal being connected to one of said positive and negative power supply terminals, said second inductor being mounted on and electrically isolated from said steering column and positioned to coaxially surround said first inductor and being in inductive communication with and electrical isolation from said first inductor;

a signal generator having an output terminal connected to said fourth terminal;

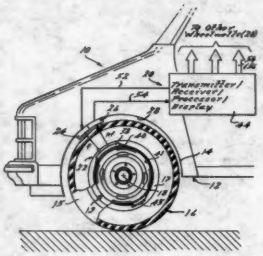
a signal detector having an input terminal connected to said fourth terminal, and an output terminal; and

a power control element having an input terminal connected to said detector output terminal and an output terminal connected to said signaling device.

4,609,905
TIRE CONDITION MONITORING SYSTEM

Anthony P. Uzzo, Dix Hills, N.Y., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 11, 1984, Ser. No. 609,411
Int. Cl.⁴ B60C *23/00*
U.S. Cl. 340—58 **18 Claims**

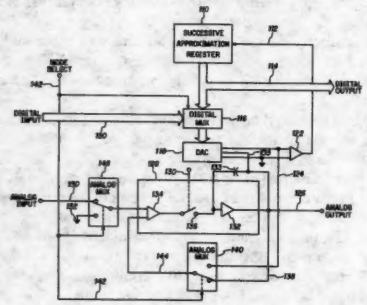


1. A tire condition monitoring system comprising:
transmitter means operative to generate an RF signal having a characteristic frequency f;
a wheel-mounted passive transponder including,
(i) first antenna means for receiving said RF signal,
(ii) a nonlinear element in circuit with said first antenna means to effect a distortion of said RF signal characterized by a harmonic signal of a frequency nf, where n is a real number other than 1,
(iii) second antenna means in circuit with said nonlinear element to radiate said harmonic signal, and
(iv) sensor means operative to disable generation of said harmonic signal in response to variation in a monitored tire condition; and
receiver means for providing a sensible condition signal in response to said harmonic signal.

4,609,906
DIGITAL-TO-ANALOG/ANALOG-TO-DIGITAL DUAL MODE CIRCUIT

Roger E. Wiegel, Toddville, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 26, 1983, Ser. No. 526,859
Int. Cl.⁴ H03K *13/02*
U.S. Cl. 340—347 C **1 Claim**

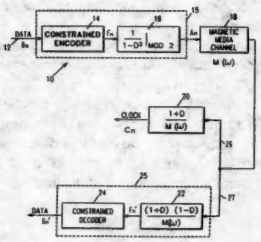


1. A circuit for selectively converting input signals, in a first mode of operation, from an analog representation to a digital representation, and alternatively converting input signals from a digital representation to an analog representation in a second mode of operation, comprising in combination:
a. a digital multiplexer having two digital inputs, a control input to select one of said digital inputs and a digital output;
b. a digital-to-analog converter coupled to said digital output of said digital multiplexer, and having a feedback loop;
c. a first analog multiplexer (**140**) having an output (**144**), a first analog input coupled to said digital-to-analog converter and a second analog input (**138**) and a control input for selecting between said first and second analog inputs;
d. a sample-and-hold circuit (**128**) coupled to said output of said first analog multiplexer (**144**) and to said second analog input (**138**) and operable in said second mode as an operational amplifier;
e. a second analog multiplexer (**148**) having an output coupled to said sample-and-hold circuit and a plurality of analog inputs, said analog inputs including a signal ground input (**152**) and a control input for selecting between said plurality of analog inputs; and
f. a single mode select line for alternatively selecting said digital-to-analog mode, or said analog-to-digital mode, of operation, and coupled to said control input of said digital multiplexer, said control input of said first analog multiplexer, and said control input of said second analog multiplexer, respectively.

4,609,907
DUAL CHANNEL PARTIAL RESPONSE SYSTEM

Roy L. Adler, Ossining; Peter A. Franaszek, Katonah, both of N.Y.; Martin Hassner, Morgan Hill, Calif., and Richard C. Schneider, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1984, Ser. No. 666,842
Int. Cl.⁴ H03M *1/12*
U.S. Cl. 340—347 DD **14 Claims**



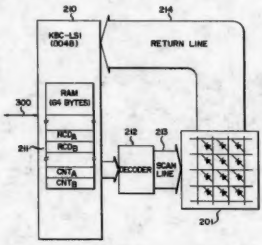
1. Apparatus for encoding and decoding a stream of randomly distributed binary bits representing digital data, comprising:
encoding means for encoding said stream of binary bits to achieve a run length limited, partial response coding of said stream;
recording means for recording representations of said encoded stream of binary bits and
recovery means for recovering timing signals and a stream of data signals from said recorded representations, comprising:
first partial response decoding means for decoding said recorded representations to recover a timing signal therefrom; and
second partial response decoding means for decoding said recorded representations to recover a stream of data signals therefrom.

4,609,908

REPEAT CONTROL APPARATUS FOR A POLLING TYPE SERIAL INTERFACE KEYBOARD APPARATUS

Katsumi Amano, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 8, 1983, Ser. No. 530,461
Claims priority, application Japan, Sep. 14, 1982, 57-159962
Int. Cl.[4] G06F *3/02*
U.S. Cl. 340—365 S 4 Claims



1. A repeat control apparatus for a keyboard apparatus, which is adapted to cause a key code input by a key operation to be sent in a bit serial mode from the keyboard apparatus to a host unit, which repeat control apparatus comprises:

first holding means for holding a first value for repeat start time control, which is set with a polling time interval from the host unit, as a unit;

second holding means for holding a second value for repeat time interval control, which is set with the polling time interval from the host unit, as a unit;

count means, coupled to the first and second holding means, for permitting the contents of the first and second holding means to be set at different times and for making a count up to a predetermined number, on the basis of a polling signal from the host unit; and

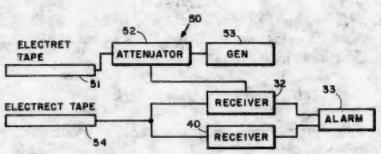
means, coupled to the count means, for sending said key code to the host unit when the count means makes a count up to a repeat start time stored in the first holding means or over a predetermined repeat time interval stored in the second holding means.

4,609,909

MULTIMODE PERIMETER INTRUSION DETECTION SYSTEM

G. Kirby Miller; Melvin E. Trimble, and Mark R. Magee, all of Saratoga, Calif., assignors to GTE Government Systems Corporation, Stamford, Conn.

Filed Mar. 4, 1985, Ser. No. 707,786
Int. Cl.[4] G08B *13/00, 13/18*
U.S. Cl. 340—541 8 Claims



1. A multimode intrusion detection system for use on a barrier forming at least part of the perimeter of an area to be protected, comprising:

transducer means comprising:

at least one elongated electret tape, said tape having an electret layer with two sides, a first conductive strip bonded tightly to one of the sides of said electret layer, and a second conductive strip disposed on the other side of said electret layer for limited movement toward and away from the electret layer whereby to produce and to receive sonic wave energy;

means for mechanically coupling said tape to said barrier with said first conductive strip proximate to and rigidly supported on said barrier and with said second conductive strip facing outwardly from said barrier;

an alternating current signal generator capable of producing an output at sonic frequencies and having said output electrically connected across said first and said second conductive strips of said tape;

first signal processor means connected to said tape conductive strips and being responsive to signals having doppler-shifted frequencies for producing an alarm; and

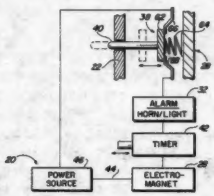
second signal processor means connected to said tape conductive strips and being responsive to barrier-vibration-induced electric signals on said strips for producing an alarm.

4,609,910

EXIT DOOR SECURITY SYSTEM

Arthur V. Geringer, 4611 Deseret, Woodland Hills, Calif. 91364; Richard G. Geringer, 28834 Barragan St., and David A. Geringer, 5382 Cheseboro Rd., both of Agoura, Calif. 90301

Filed Apr. 9, 1985, Ser. No. 721,635
Int. Cl.[4] G08B *13/08*
U.S. Cl. 340—545 17 Claims



1. An exit door security system, said system comprising, in combination:

(a) an exit door frame;

(b) an exit door connected to said frame;

(c) an electromagnet connected to said frame;

(d) a magnetically attractable armature secured to said door adapted to be attracted to and held by said electromagnet;

(e) an alarm;

(f) a timer;

(g) a power source;

(h) an electric circuit electrically interconnecting said alarm, electromagnet, timer and power source; and,

(i) switch means connected in said circuit and disposed in said frame, said switch means being closed when said door is fully closed to allow activation of said electromagnet to prevent full opening of said door.

4,609,911

VARIABLE FREQUENCY RF ELECTRONIC SURVEILLANCE SYSTEM

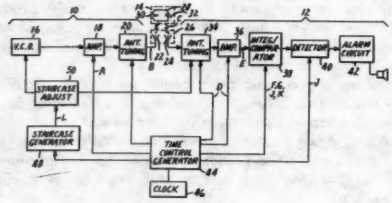
Gary E. Nourse, Osceola, Wis., and Dean M. Dowdle, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 510,954, Jul. 5, 1983, Pat. No. 4,531,117. This application Jul. 19, 1985, Ser. No. 756,703
The portion of the term of this patent subsequent to Jul. 23, 2002, has been disclaimed.
Int. Cl.[4] G08B *13/24*
U.S. Cl. 340—572 16 Claims

1. Apparatus for detecting, in an interrogation zone, articles having affixed thereto markers containing circuits each reso-

nant at a frequency within a predetermined range of frequencies and having a bandwidth centered about said resonant frequency, said apparatus comprising

transmitter means for generating interrogation signals in said interrogation zone in the form of short bursts of electromagnetic field energy at a sufficient number of discrete, different RF frequencies to provide bursts of at least three



different frequencies within the bandwidth of each of said resonant circuits, said bursts separated by quiescent periods, and

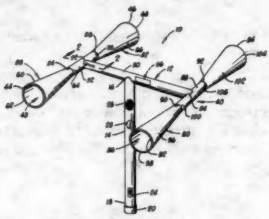
receiver means for detecting electromagnetic energy in said interrogation zone during the quiescent periods, and for actuating an alarm in response to the detection of energy at at least three frequencies within said predetermined range during periods following pulses.

4,609,912

DETECTOR SYSTEM FOR DETECTING AIR INFILTRATION LEAKS AND THE LIKE

Stewart R. Ryan, P.O. Box 2711 Willow Creek, Norman, Okla. 73071

Filed Feb. 14, 1983, Ser. No. 466,090
Int. Cl.[4] G08B *21/00*; G01F *1/68*
U.S. Cl. 340—603 **25 Claims**



1. A detector system for detecting air infiltration air flow, comprising:

a first detector for sensing air flow and providing an output indication indicative of the sensed air flow;

a second detector for sensing air flow and providing an output indication indicative of the sensed air flow;

a probe, the first detector being supported on the probe in one position and the second detector being supported on the probe on one other position spaced a distance from the first detector; and

means for receiving the output indications provided by the first and the second detectors and for providing an output indication indicating an increase in the air flow sensed by one of the first and the second detectors relative to the air flow sensed by the other one of the first and the second detectors, comprising:

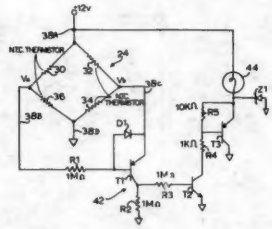
means for providing an audibly perceivable output indication indicating an increase in the air flow sensed by one of the first and the second detectors relative to the air flow sensed by the other one of the first and the second detectors.

4,609,913

FLUID LEVEL SENSOR

Thomas P. Arbogast, Troy, and David Eilola, Southfield, both of Mich., assignors to Wickes Manufacturing Company, Southfield, Mich.

Filed Feb. 22, 1985, Ser. No. 704,346
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—622 **8 Claims**



1. A liquid level sensor comprising:

a probe;

a thin, flat, heat-conducting substrate having a first end mounted to said probe and a second free end opposite to said first end;

a bridge circuit deposited upon said substrate, said bridge circuit including first, second, third and fourth thermistors, two of said thermistors being positioned relatively closer to said second free end of said substrate than the other two of said thermistors such that the first mentioned two of said thermistors may be submerged within a liquid while said other two of said thermistors remain outside thereof;

heating means deposited upon said substrate for heating substantially all of said substrate and all four of said thermistors;

a first pair of conductors connected to said bridge circuit for connecting said bridge circuit between a voltage source and ground; and

a second pair of conductors connected across said bridge circuit for connection to a detection circuit;

whereby said second free end of said substrate and said two thermistors positioned relatively closer to said second free end are heated more than said first end of said substrate and the other two of said thermistors when said heating means is actuated and said substrate, including said four thermistors, is entirely exposed to the air.

4,609,914

VOLTAGE MONITOR AND ALARM FOR POWER LINE

Saul S. Fathi, Huntington, N.Y., assignor to Ultima Electronics, Ltd., Farmingdale, N.Y.

Filed Apr. 19, 1984, Ser. No. 602,015
Int. Cl.[4] G08B *21/00*; G01R *1/02*
U.S. Cl. 340—660 **13 Claims**

1. A device for monitoring the voltage of an electrical power line means, comprising:

a plurality of lamps in circuit with said power line means;

a display driver in circuit with said lamps and said power line means and arranged to light one lamp at a time depending on the voltage of said power line means in a predetermined voltage range;

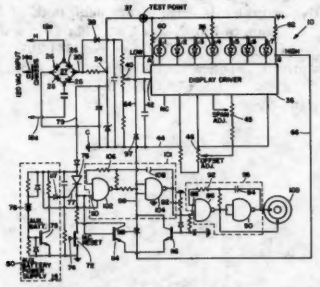
oscillator means in circuit with said display driver for generating a fixed frequency signal when said voltage of said power line means is outside said voltage range;

an audible sound generator in circuit with said oscillator

means and driven thereby to sound an alarm when said oscillator means generates said signal;

an auxiliary power supply connected in circuit with said oscillator means; and

electronic latching means in circuit with said auxiliary



power supply and said oscillator means and arranged to pass a driving current to said oscillator means to keep the same energized and generating said signal, so that said alarm continues to sound even though said voltage of said power line means returns to a magnitude within said predetermined voltage range.

4,609,915

APPARATUS FOR THE CONTROL OF ROTATING PARTS IN MACHINERY

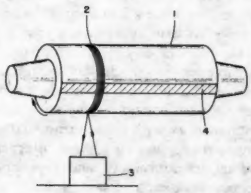
Walter Erkens, Denzlingen, Fed. Rep. of Germany, assignor to Rhodia Aktiengesellschaft, Freiburg, Fed. Rep. of Germany

Filed Oct. 28, 1983, Ser. No. 546,406

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1983, 3321261

Int. Cl.[4] G08B *21/00*

U.S. Cl. 340—671 **2 Claims**



1. A device for monitoring rotating parts of machines and installations for the production, treatment and processing of monofilaments, yarns, wires, tapes, webs and the like on the formation of wraps or accumulations, wherein the surface of the rotating part is provided with marks, and opposite the marked surface, a sensor consisting of a transmitter and a receiver is arranged, said sensor being of the type operating in the range of visible light, infrared radiation or ultraviolet radiation, the marks having then, compared with the remaining surface of the rotating part, a different brightness, different infrared reflectivity or different ultraviolet reflectivity respectively, or of the type operating in the range of ultrasonics or of the type operating pneumatically, the marks having then, compared with the remaining surface of the rotating part, a different ultrasonics reflectively or differently form respectively, which due to the passage of the marks, generates a signal proportional to the frequency of the rotating part, and an electronic evaluating system belonging to switching elements, which is adjusted for a reference frequency, forwards a signal to output relays belonging to the switching elements when, due to the beginning of the formation of a wrap or accumulation, the signal coming from the sensor falls below the said reference frequency during a time span the electronic evaluating device is previously set for, the switching elements then bring about the arrest of the rotating part of the machine or of the installation, wherein the marks consist of strips disposed parallel to the axis of rotation of the rotating part, or of strips disposed inclined with respect to the axis of rotation of the rotating part.

4,609,916

METHOD AND DEVICE FOR DISPLAYING PRIMARY COLORS UTILIZING INPUT VALUES REPRESENTATIVE OF BRIGHTNESS, SATURATION AND HUE OF A COLORED BACKGROUND

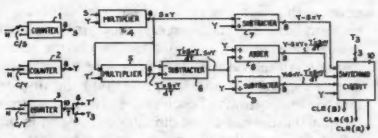
Thierry Bedos, Levallois Perret; Roland Clerissi, Meulan; Jacques Vallee, Saint Brice Sous Foret, and Kiet Nguyen Xuan, Mery sur Oise, all of France, assignors to Thomson CSF, Paris, France

Filed May 1, 1984, Ser. No. 605,911

Claims priority, application France, May 10, 1983, 83 07797

Int. Cl.[4] G09G *1/28*

U.S. Cl. 340—703 **3 Claims**



2. A device for displaying R, G, B primary colors of a colored background comprising means for displaying input values S, Y and T representing respectively saturation, brightness and hue values, T being formed from two values, namely a value T_3 representing the most significant values of the hue and with which, as a function of its value, is associated one value from among six values varying in increasing order from the first to the sixth, and a value T' representing the least significant values of the hue and varying from the value 0 to the value $2 \times dT$ (dT being a predetermined constant value); calculating means coupled with the display means for supplying signals

$$K1 = Y - SxY + \frac{T'xSxY}{dT}, \; k2 = Y - SxY \text{ and}$$

$$k3 = Y + SxY - \frac{T'xSxY}{dT};$$

switching means coupled with the display means for receiving the signals Y and T_3 and to the calculating means to receive the signals **k1**, **k2**, **k3**, said switching means serving to supply as signals representing the respective coefficients of the three primary colors of the colored background:

for the first of the six values associated with T_3: Y, **k1**, **k2**

for the second of the six values associated with T_3: **k3**, Y, **k2**

for the third of the six values associated with T_3: **k2**, Y, **K1**

for the fourth of the six values associated with T_3: **k2**, **k3**, Y

for the fifth of the six values associated with T_3: **k1**, **k2**, Y

for the sixth of the six values associated with T_3: Y, **k2**, **k3**.

4,609,917

THREE-DIMENSIONAL DISPLAY SYSTEM

Tsu Y. Shen, Andover, Mass., assignor to Lexidata Corporation, Billerica, Mass.

Continuation of Ser. No. 458,362, Jan. 17, 1983, Pat. No. 4,475,104. This application Sep. 19, 1984, Ser. No. 652,326

Int. Cl.[4] G09G *1/16*

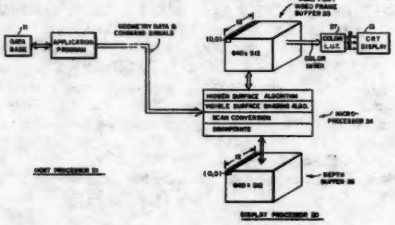
U.S. Cl. 340—729 **18 Claims**

1. A display processing system for processing input informa-

tion for use in displaying a three-dimensional image on a two-dimensional display means, said system comprising

means for successively receiving in any order input image information definding at least part of each of a plurality of geometric elements in a three-dimensional image; and

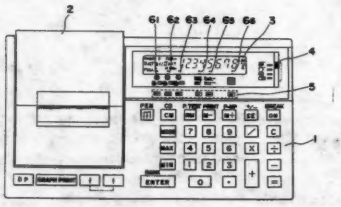
means for successively processing the received input image information with respect to each successive geometric element to determine the visible and non-visible portions thereof and to provide processed image information concerning the visible portions of each successive geometric element and for successively supplying said processed image information to a display means for successively displaying thereon the visible portions of each successive geometric element and for preventing the display of the non-visible portions of each successive geometric element so that the overall three-dimensional image is incrementally built up on the display means on a geometric element by geometric element basis.



4,609,918
GRAPH-DRAWING MACHINE

Yasuhiro Nakanishi, Nara, and Koichi Hatta, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 2, 1983, Ser. No. 528,845
Claims priority, application Japan, Sep. 10, 1982, 57-158392
Int. Cl.[4] G09G *3/00*
U.S. Cl. 340—753 **8 Claims**



1. A system for representing data supplied thereto as a graph representative of said data, comprising:

graph type selection means for selecting a desired one of a plurality of different graph types having different graphic visual representations of data supplied said system;

means, responsive to said data supplied said system, for printing a graph of said data, said means for printing being further responsive to said graph selection means, for drawing said graph of the selected said graph type; and

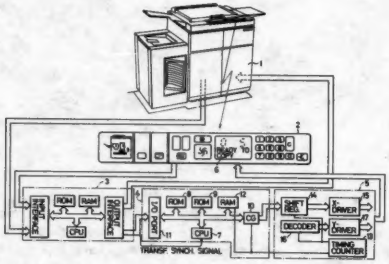
graph format selection means for selecting one of a plurality of different graph formats, each said graph format representing a differing shading and/or coloring of each said graph type, said graph format selection means including, switch means for selecting each said graph format; and

a plurality of display indicators, each associated with one of said graph formats and responsive to selection of its associated graph format by said switch means, for indicating said graph format selected by said switch means.

4,609,919
SENTENCE DISPLAYING APPARATUS WITH SENTENCE SECTION

Akira Miyazaki, and Jun-ichi Yamaguchi, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1983, Ser. No. 541,209
Claims priority, application Japan, Oct. 12, 1982, 57-178737
Int. Cl.[4] G09G *3/00*
U.S. Cl. 340—792 **4 Claims**



1. A sentence displaying apparatus which comprises:

a sentence memory for storing predetermined display sentences;

means for producing sentence display instructions, including an alternate mode display instruction for alternating display of multiple sentences;

a signal processing means responsive to said sentence display instructions for reading respective display sentences out of said sentence storing memory according to said sentence display instructions; and

a display section for displaying display sentences;

said signal processing means including dividing means for dividing a selected display sentence into a plurality of parts when the number of characters of the display sentence to be displayed on said display section is larger than a predetermined value, and means for providing said divided sentence parts to said display section for display in a time division manner with predetermined display timing;

said display section responding to said alternate mode instruction signal to alternately and repetitively display plural sentences with each of said plural sentences being displayed in a time division manner if the number of characters of said each sentence exceeds said predetermined value.

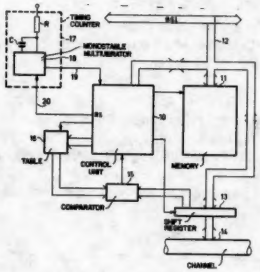
4,609,920
METHOD OF AND DEVICE FOR ALLOCATING A TOKEN TO STATIONS OF A COMMUNICATION NETWORK HAVING AT LEAST TWO LOGIC LOOPS FOR THE CIRCULATION OF THE TOKEN, EACH LOOP HAVING AN ASSIGNED PRIORITY

Gérard Segarra, Jossigny, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 13, 1983, Ser. No. 494,469
Claims priority, application France, May 18, 1982, 82 08685
Int. Cl.[4] H04Q *3/00, 5/00, 11/00*
U.S. Cl. 340—825.51 **9 Claims**

1. A method for allocating a right to transmit to different stations which form part of a decentralized communication network, and each of which is connected to a data traffic channel for the transmission of data, a right to transmit being allocated to the various stations by means of a token, at least

one priority level indicating a frequency of allocation of the token being assigned to each station, stations having the same priority level forming part of a group and assigned to a logic loop for the circulation of the token, said token is successively allocated to the stations of the same logic loop and, after said token has been allocated to all stations of the same logic loop, said token passes to another logic loop formed by a group of stations having a lower priority level, the station receiving the token having the right to transmit data having a priority level



corresponding to that assigned to the logic loop in which the token circulates, said circulation of the token in a first logic loop being interrupted under control of an interrupt signal generated by a station possessing the token, said interrupt signal being generated upon expiration of a time interval representing a time duration between two successive allocations of the token to a station assigned to a second logic loop having a priority level which is higher than that of the first logic loop, said token then being allocated to a station of said second logic loop under the control of said interrupt signal.

4,609,921

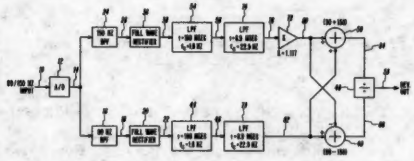
DIGITAL MODULATION DEPTH DETECTOR

James M. Flynn, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 9, 1983, Ser. No. 550,268

Int. Cl.[4] G01S 1/18

U.S. Cl. 343—411 **2 Claims**



1. The method for digitally determining the difference in depth of modulation between first and second tone modulation signals as represented by composite first and second tone modulations on a common carrier, comprising the sequential steps of:

(1) converting an analog signal representing said composite tone modulation to a digital signal,

(2) digitally bandpass filtering the digital signal of step (1) to obtain first and second digital signals respectively definitive of said first and second tone modulation components,

(3) digitally full-wave rectifying each of said first and second tone modulation components,

(4) digitally low-pass filtering each of the full-wave rectified tone modulation components of step (3) and digitally multiplying the higher frequency one of the low-pass filtered modulation components obtained by a predetermined gain factor in excess of unity,

(5) digitally obtaining the sum and difference of each of the low-pass filtered modulation components of step (4), and

(6) digitally dividing the difference obtained in step (5) by the sum obtained in step (5) to provide a digital output representing the difference in depth of modulation between said first and second tone modulation components.

4,609,922

APPARATUS FOR CONTROLLING AND FOR SIGNAL TRANSMISSION IN CONVEYOR INSTALLATIONS

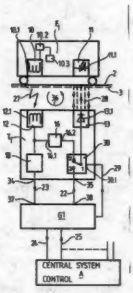
Peter Boegli, Studen, and Ulrich Heiz, Säriswil, both of Switzerland, assignors to Inventio AG, Hergiswil, Switzerland

Filed Oct. 24, 1983, Ser. No. 544,787

Claims priority, application Switzerland, Oct. 26, 1982, 6227/82

Int. Cl.[4] G01S 13/80

U.S. Cl. 343—6.8 R **21 Claims**



1. An apparatus for controlling and for signal transmission in conveyor installations containing a number of conveyors movable along a track system constituted by a number of travel path sections, comprising:

a central system control;

a stationary transmitting and receiving installation containing a predetermined number of control locations and providing communication between individual ones of said conveyors and said central system control;

said stationary transmitting and receiving installation comprising a number of transponders each arranged at a preselected one of said predetermined number of control locations;

each said transponder being in wireless communicaton with a conveyor when the same is located within an operable range of said transponder and in two-wire communication with said central system control;

said stationary transmitting and receiving installation comprising a number of multiplexers each operatively associated with a respective one of said transponders;

each said transponder being selectively switchable by said multiplexer into either a first operational state in which said transponder simultaneously operates as a responder when interrogated by one of said conveyors present within the operable range thereof and as a transmitter for signal transmission to said central system control and a second operational state in which said transponder operates as a bidirectional transmitter between said one conveyor and said central system control;

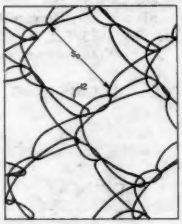
each said transponder, for operation in said first operational state, comprising at least one code generator, a current amplifier and a transmitter for transmitting to said one conveyor a response signal stored in said code generator; and

each said transponder, for operation in said second operational state, comprising a demodulator, an output amplifier and an input amplifier.

4,609,923
GOLD-PLATED TUNGSTEN KNIT RF REFLECTIVE SURFACE

Bobby J. Boan, Indian Harbour Beach; Martin Schwam, Indialantic; Marvin R. Sullivan, and Amos W. Morse, both of Palm Bay, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Sep. 9, 1983, Ser. No. 530,631
Int. Cl.[4] H01Q *1/36*
U.S. Cl. 343—897 **13 Claims**

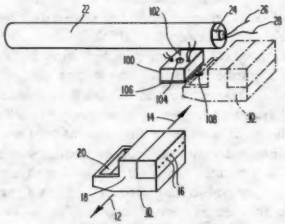


1. An antenna for radio waves comprising a conductive open mesh formed of wire containing gold and tungsten, with each opening of said mesh being defined by multiple loops of wire, wherein at least one of said loops is formed by the same wire folded back upon itself, the mesh being configured such that relative displacement between loops of wire at different portions of the mesh is permitted, thereby enabling the loops of wire of said mesh at relatively different portions of the mesh to pass by one another and enter open regions of the mesh, so as to be effectively mechanically displaceable with respect to one another in the contour of the mesh in response to changes in environmental conditions, whereby the effective contour of the antenna formed by the mesh is retained.

4,609,924
BUFFER RESERVOIR FOR INK JET APPARATUS AND METHOD

Thomas W. De Young, Stormville, N.Y., assignor to Exxon Printing Systems, Inc., Brookfield, Conn.

Filed Oct. 15, 1984, Ser. No. 661,034
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—1.1 **11 Claims**



1. A method of operating an ink jet apparatus comprising means for storing ink in solid state at a fixed location, scanning at least one ink jet and an associated reservoir along a series of locations, moving said at least one ink jet and associated reservoir with respect to said fixed location on demand, and melting said solid state ink on demand, the improvement comprising:

filling a buffer reservoir for ink with the melted ink on demand with a first volume of ink;

subsequently filling said associated reservoir with the melted ink from said buffer reservoir with a lesser volume of ink than said first volume;

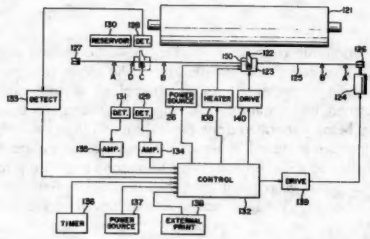
supplying melted ink from said associated reservoir to said at least one jet; and

repeatedly filling said associated reservoir and supplying melted ink to said at least one jet before again filling said buffer reservoir.

4,609,925
METHOD FOR REMOVING AIR BUBBLES OR SOLID IMPURITIES FROM THE PRINTING HEAD OF A DROP-ON-DEMAND TYPE INK JET PRINTER

Taketo Nozu, Hino; Yoshiaki Kimura, Hachioji, and Yasuhiko Tanaka, Fuchu, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 452,440, Dec. 23, 1982, abandoned. This application Jan. 30, 1985, Ser. No. 696,418
Claims priority, application Japan, Dec. 26, 1981, 56-213896; Dec. 26, 1981, 56-213897; Dec. 26, 1981, 56-213900; Feb. 2, 1982, 57-16082
Int. Cl.[4] G01D *15/18*
U.S. Cl. 346—1.1 **31 Claims**



1. A method for removing air bubbles or solid impurities from a printing head of a drop-on-demand type ink jet printer, the method comprising:

(a) applying mechanical vibrations to the ink in said printing head when it is not in a printing state by generating a driving wave having a sweeping frequency with a driving circuit,

(b) applying pressure to form a forced ink flow during the period of step (a) or subsequent thereto.

4,609,926
RIBBON TRANSFER COLOR-ON-DEMAND RESISTIVE RIBBON PRINTING

Ari Aviram, Croton-On-Hudson, and Derek B. Dove, Mount Kisco, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1985, Ser. No. 728,713
Int. Cl.[4] G01D *15/10*
U.S. Cl. 346—76 PH **9 Claims**

1. A color-on-demand apparatus for resistive ribbon printing, comprising:

a resistive printing ribbon comprised of an opaque resistive layer, through which electrical current passes to effect resistive ribbon printing and a layer of fusible resin which can be uncolored,

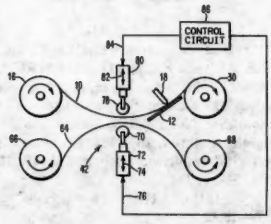
a color ribbon including a substrate layer having a low surface energy and a layer of colored fusible resin thereon,

means for bringing together said printing ribbon and said color ribbon to cause said fusible resin layers on each of said ribbons to contact one another at a selected location therealong,

heat means for heating said layers of fusible resin when said layers are in contact at least to a temperature at which said

resin layers become tacky, but less than the melting points of said resin layers,

separation means for separating said resistive printing ribbon and said color ribbon to peel at least a portion of said colored resin layer from said color ribbon, said peeled



colored resin layer adhering to said resistive ribbon when said ribbons are separated from one another, and

means for effecting resistive ribbon printing using said resistive printing ribbon after said colored resin layer has been transferred to said resistive printing ribbon.

4,609,927

IMAGE RECORDING APPARATUS WITH DIVIDED MEMORY

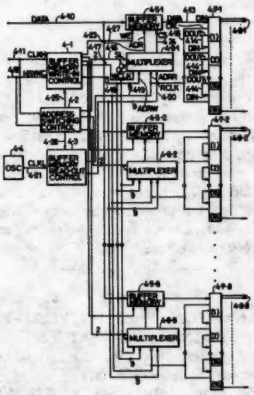
Tadashi Yoshida, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 27, 1983, Ser. No. 508,331

Claims priority, application Japan, Jul. 9, 1982, 57-118499

Int. Cl.⁴ G01D *15/06;* **H04H** *1/23, 1/40*

U.S. Cl. 346—154 **5 Claims**



1. An image recording apparatus comprising:

first memory means having a plurality of memory units each adapted for storing image signals representative of a predetermined amount of image information;

means for controlling storage of a line of image signals serially incoming into said first memory means in such a manner that said plurality of memory units are sequentially selected each to store image signals corresponding to said predetermined amount of image information;

recording means having a plurality of recording elements arranged in a line configuration for recording an image on a recording material on a line by line basis;

second memory means having a plurality of shift registers each adapted for storing said predetermined amount of image information read out serially from the associated one of said plurality of memory units and for outputting in parallel the stored image signals carrying said image information stored in said shift registers; and

driving means having a plurality of driving units each adapted for driving a predetermined number of said plurality of recording elements to record said predetermined amount of image information received in parallel from the associated one of said plurality of shift registers, said plurality of driving units being simultaneously operable, wherein said storage controlling means is for causing storage of said image signals in said memory units to be conducted at a speed higher than that with which signals are read-out from said memory units.

4,609,928

THERMOSENSITIVE IMAGE TRANSFER MEDIUM

Keishi Kubo, Yokohama; Nobuhiro Takigawa, and Eiichi Kawamura, both of Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

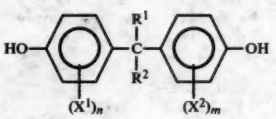
Filed Dec. 13, 1983, Ser. No. 561,011

Claims priority, application Japan, Dec. 16, 1982, 57-220843

Int. Cl.⁴ B41M *5/22*

U.S. Cl. 346—208 **17 Claims**

1. A thermosensitive image transfer medium comprising (i) an image transfer sheet having an image transfer layer consisting essentially of aleuco dye; and (ii) an acceptor sheet having an acceptor layer consisting essentially of a color developer which induces color formation in said leuco dye, said color developer being a mixture of a bisphenol derivative and a p-hydroxybenzoic acid ester having a melting point of 100° C. or less, said bisphenol derivative having the formula



wherein X^1 and X^2 each represent a loer alkyl group or halogen, R^1 and R^2 each represent hydrogen or an alkyl group having 1 to 16 carbon atoms, and m and n each represent an integer of 0 through 4; at least one of said image transfer layer and said acceptor layer containing a porous filler having an oil absorption of 50 ml/100 g or more as measured in accordance with the Japanese Industrial Standard K 5101.

4,609,929

CONDUCTIVITY-ENHANCED COMBINED LATERAL MOS/BIPOLAR TRANSISTOR

Raj Jayaraman, Brookline, Mass., and Barry M. Singer, New York, N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed Dec. 21, 1984, Ser. No. 684,442

Int. Cl.⁴ H01L *29/78, 27/04, 29/72*

U.S. Cl. 357—23.4 **4 Claims**

1. A combined lateral MOS/bipolar transistor, which comprises:

a semiconductor substrate of a first conductivity type;

a first, floating semiconductor layer of a second conductivity type opposite to that of the first on a first major surface of said substrate;

a second semiconductor layer of said first conductivity type on said first layer, the doping level of said second semiconductor layer being at most equal to that of said substrate;

a third semiconductor surface layer of said second conductivity type on said second layer;

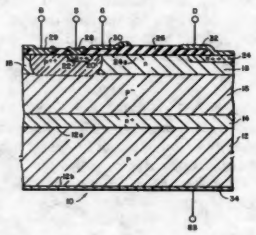
a surface-adjoining channel region of said first conductivity type in said third layer and connected to said second

semiconductor layer, said channel region being separated from said first, floating semiconductor layer by said second semiconductor layer;

a surface-adjoining source region of said second conductivity type in said channel region;

a surface-adjoining drain contact region of said second conductivity type in said third layer and spaced apart from said channel region;

an extended drain region formed from a portion of said third layer between said drain contact region and said channel region;



an insulating layer on the surface of said transistor and covering at least a first portion of the surface-adjoining channel region located between said source and said extended drain regions;

a gate electrode on said insulating layer, over said first portion of the channel region and electrically isolated from said third layer;

a base electrode connected to a second portion of said channel region remote from said first region; and

source and drain electrodes connected respectively to the source and drain contact regions of the transistor.

4,609,930

THIN FILM TRANSISTOR

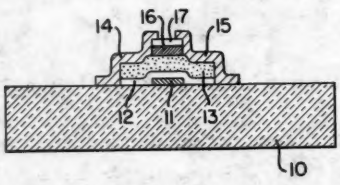
Tsuneo Yamazaki, Tokyo, Japan, assignor to Seiko Instruments & Electronics Ltd., Tokyo, Japan

Filed May 7, 1984, Ser. No. 607,418

Claims priority, application Japan, May 6, 1983, 58-78939

Int. Cl.[4] H01L *29/78*

U.S. Cl. 357—23.7 **8 Claims**



1. A thin film transistor of an insulated gate electric field effect type comprising: a conductor layer of an electrically conductive material disposed on at least one major surface of a substrate to define a gate electrode; an insulator layer of an electrically insulating material disposed on the conductor layer; source and drain electrodes of electrically conductive material disposed on the substrate and in contact with edge portions of said insulator layer, said source and drain electrodes being spaced apart from each other; a semiconductor layer of semiconductor material in contact with said source and drain electrodes and in contact with said insulator layer in the region between said source and drain electrodes; a shading layer in contact with said source and drain electrodes and in contact with said semiconductor layer in the region between said source and drain electrodes, said shading layer comprised of an amorphous silicon containing germanium in an amount more than 30% by atomic density; and an insulator layer of an electrically insulating material in contact with said source and drain electrodes and in contact with said shading layer in the region between said source and drain electrodes.

4,609,931

INPUT PROTECTION MOS SEMICONDUCTOR DEVICE WITH ZENER BREAKDOWN MECHANISM

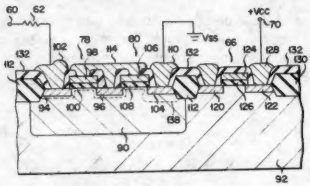
Hideharu Koike, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 398,355, Jul. 15, 1982, abandoned. This application Jun. 26, 1985, Ser. No. 749,112

Claims priority, application Japan, Jul. 17, 1981, 56-111917; Jul. 17, 1981, 56-111934

Int. Cl.[4] H01L *29/94, 29/90*

U.S. Cl. 357—23.13 **7 Claims**



1. A semiconductor device to provide overvoltage protection at an input terminal of an integrated circuit, said device comprising:

a semiconductor substrate of a first conductivity type and having a first surface portion on which said integrated circuit is formed, and a second surface portion;

a semiconductor well region of a second conductivity type formed in said second surface portion of said substrate; and

a metal oxide semiconductor field effect transistor formed in said well region and having a grounded source layer of said first conductivity type, a drain layer of said first conductivity type connected to said input terminal, and a gate layer electrically connected to said semiconductor well region, whereby, when an abnormally large voltage appears at the input terminal, Zener breakdown occurs between said well region and said source or drain layer and the well region potential approaches the potential of said drain or source layer according to the polarity of said abnormally large voltage.

4,609,932

NONPLANAR ION-SENSITIVE FIELD-EFFECT TRANSISTOR DEVICES

Thomas R. Anthony, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 18, 1985, Ser. No. 712,940

Int. Cl.[4] H01L *29/06, 29/66, 27/26*

U.S. Cl. 357—25 **12 Claims**

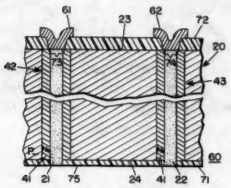
1. A nonplanar ISFET device comprising:

a semiconductor body of a first conductivity type having first and second opposing major surfaces and first and second, spaced-apart, high-aspect-ratio bores extending into the body from the first major surface thereof;

first and second impurity regions of a second conductivity type in the body, each one concentrically surrounding a respective one of the first and the second bores and extending between the first and the second major surface of the body;

first and second connection means making electrical contact to the first and second impurity zones, respectively, from the first major surface of the body; and

an ion-sensitive insulating layer overlying the second major surface of the body extending at least between the first and



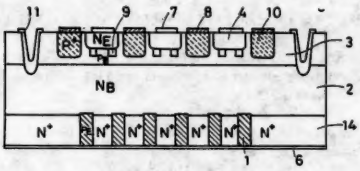
second impurity zones and covering a region therebetween.

4,609,933

GATE TURN-OFF THYRISTOR HAVING P+ GATE AND EMITTER

Toshihiro Nakajima; Yoshiaki Hisamoto, and Kozo Yamagami, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 18, 1984, Ser. No. 662,080
Claims priority, application Japan, Nov. 30, 1983, 58-228042
Int. Cl.[4] H01L *29/74, 29/06*
U.S. Cl. 357—38 **11 Claims**



1. In a gate turn-off thyristor comprising an emitter layer (1) of one conductivity type, a base layer (2) of the opposite conductivity type formed on said emitter layer (1) of said one conductivity type, a base layer (3) of said one conductivity type formed on said base layer (2) of said opposite conductivity type, an emitter region (4) of said opposite conductivity type formed on a part of the surface layer of said base layer (3) of said one conductivity type, one electrode (6) formed on the surface of said emitter layer (1) of said one conductivity type, another electrode (7) formed on the surface of said emitter region (4) of said opposite conductivity type, and a gate electrode (8) on the surface of said base layer (3) of said one conductivity type, the improvement wherein

layer regions (10, 9) of a high impurity concentration of said one conductivity type in said base layer (3) of said one conductivity type are formed immediately beneath said gate electrode (8) in direct contact therewith and immediately beneath the peripheral portions of said emitter region (4) of said opposite conductivity type in direct contact therewith, and

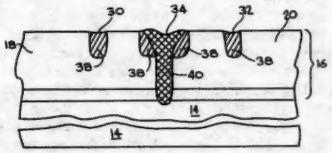
the depth of every layer region (10, 9) of said high impurity concentration of said one conductivity type is selected to be deeper than said emitter region (4) of said opposite conductivity type and shallower than said base layer (3) of said one conductivity type.

4,609,934

SEMICONDUCTOR DEVICE HAVING GROOVES OF DIFFERENT DEPTHS FOR IMPROVED DEVICE ISOLATION

Jacob D. Haskell, Palo Alto, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 6, 1984, Ser. No. 597,616
Int. Cl.[4] H01L *27/02*
U.S. Cl. 357—42 **8 Claims**



1. An improved metal oxide semiconductor (MOS) device, said MOS device having a substrate and having a first conductivity type region and a second conductivity type region formed in an epitaxial layer over said substrate, said MOS device further having two devices of a second conductivity type within the region of a first conductivity type, the improvement comprising:

a first groove formed between said two devices of said second conductivity type in said first conductivity type region, said first groove being shallower in depth than said first conductivity type region, said first groove operating to isolate from one another said two devices of a second conductivity type; and

a second groove formed between said first conductivity type region and said second conductivity type region, said second groove extending to a depth greater than the depth of said first groove, and said second groove extending to such a depth that said second groove penetrates said substrate, said second groove operating to isolate said first conductivity type region from said second conductivity type region,

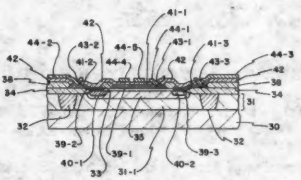
wherein said first groove and said second groove are substantially filled with filler material.

4,609,935

SEMICONDUCTOR DEVICE WITH AN IMPROVED CROSSING STRUCTURE AT THE INTERSECTION OF A RESISTOR REGION AND A WIRING CONDUCTOR

Hideyuki Kondo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 21, 1983, Ser. No. 553,707
Claims priority, application Japan, Nov. 24, 1982, 57-205727
Int. Cl.[4] H01L *27/02*
U.S. Cl. 357—51 **3 Claims**



1. A semiconductor device comprising a semiconductor layer of one conductivity type; a resistor region of an opposite conductivity type formed in said semiconductor layer; a first silicon-oxide film having a portion buried in said semiconductor layer and surrounding said resistor region; a silicon film selectively covering a central portion of said resistor region

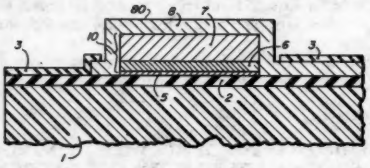
and exposing opposing end portions of said resistor regions; first and second polycrystalline semiconductor electrode layers connected respectively to said end portions of said resistor region and extending over said first silicon oxide film; a polycrystalline semiconductor shield layer formed on said silicon nitride film; a second silicon oxide film separating said first and second polycrystalline semiconductor electrode layers and said polycrystalline semiconductor shield layer from one another; a third silicon oxide film covering said first and second polycrystalline semiconductor electrode layers, said polycrystalline semiconductor shield layer, and said second silicon oxide film; a first contact hole formed in said third silicon oxide film to expose a part of said polycrystalline semiconductor shield layer; second and third contact holes formed in said third silicon oxide film to expose parts of said first and second polycrystalline semiconductor electrode layers, respectively; a first wiring layer extending over said third silicon oxide film to cross said polycrystalline semiconductor shield layer over said resistor region; a second wiring layer provided separately from said first wiring layer and supplied with a reference potential; a third wiring layer connected to said part of said first polycrystalline semiconductor electrode layer through said second contact hole; a fourth wiring layer connected to said part of said second polycrystalline semiconductor electrode layer through said third contact hole; and a conductive layer connected through said first contact hole to said part of said polycrystalline semiconductor shield layer and extending to said second wiring layer to supply said reference potential to said polycrystalline semiconductor shield layer.

4,609,936

SEMICONDUCTOR CHIP WITH DIRECT-BONDED EXTERNAL LEADFRAME

Thomas A. Scharr, Tempe, and Vern H. Winchell, II, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 19, 1979, Ser. No. 76,878
Int. Cl.[4] H01L *23/48, 29/40, 29/44*
U.S. Cl. 357—68 **16 Claims**



1. A leaded semiconductor chip assembly comprising:
a semiconductor substrate including metallic lead attach pedestals comprising substantially aluminum bonding areas supported by metallic means having a hardness greater than aluminum, and
a multiplicity of hard flat leads with direct bonds to said bonding areas.

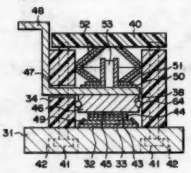
4,609,937

POWER SEMICONDUCTOR DEVICE WITH O-RING SEAL

Minami Takeuchi, 3-19-6, Fujimidai, Nerima-ku, Tokyo, and Shuichi Otake, 2-16-9, Miyoshi, Koto-ku, Tokyo, both of Japan

Continuation of Ser. No. 381,763, May 25, 1982. This application Apr. 26, 1985, Ser. No. 726,943
Claims priority, application Japan, May 28, 1981, 56-81730
Int. Cl.[4] H01L *23/48, 23/02, 23/32*
U.S. Cl. 357—79 **11 Claims**

1. A power semiconductor device comprising a support plate also serving as a heat radiator, a compression bonding type semiconductor element structure supported on said support plate and electrically connected thereto, a case provided on said support plate to surround said semiconductor element structure, a lead electrode electrically connected to said compression bonding type semiconductor element structure and led out to the outside of the case through an aperture in a side wall thereof, a spring structure disposed inside said case and urging said lead electrode and compression bonding type semiconductor element structure toward said support plate, a cover for holding said spring structure in a predetermined biased state, wherein a spacing electrode is provided between said lead electrode and said semiconductor element structure, and



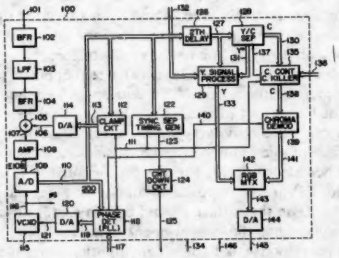
wherein said aperture is sized and spaced axially from said semiconductor element structure a distance sufficient to provide an uninterrupted annular portion of the inner wall of said case immediately adjacent the periphery of said electrode, and an O-ring is clamped between the outer periphery of said spacing electrode and the inner wall portion of said case for hermetically sealing a semiconductor element of said semiconductor element structure from the external atmosphere, said O-ring being free to slip under the influence of an urging force of said spring structure, and means for integrating said case, the parts accommodated therein, and said support plate.

4,609,938

DIGITAL TV RECEIVER WITH DIGITAL VIDEO PROCESSING CIRCUIT

Susumu Suzuki, Kawasaki, and Yukinori Kudo, Fujisawa, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 26, 1983, Ser. No. 517,443
Claims priority, application Japan, Jul. 30, 1982, 57-132262; Dec. 28, 1982, 57-233420
Int. Cl.[4] H04N *9/70*
U.S. Cl. 358—26 **32 Claims**



1. A digital television receiver comprising:
digital converter means for converting an analog video signal to a digital video signal;
signal separator means coupled to said digital converter means, for separating a digital chrominance signal and a digital luminance signal from said digital video signal;
color killer means coupled to said signal separator means and being responsive to burst components of said digital chrominance signal, for gating said digital chrominance signal to generate a gated color signal when said burst compo-

nents are contained in said digital chrominance signal wherein said color killer means includes:

(a) multiplier means for digitally multiplying said digital chrominance signal by a amplitude control signal and providing a multiplied chrominance control signal;

(b) comparator means for comparing a color control signal and said amplitude control signal, and generating a color killer signal when a result of comparison of said comparator means indicates that a predetermined relation between said color control signal and said amplitude control signal is established;

(c) gate means coupled to said multiplier means and to said comparator means, for passing said multiplied chrominance signal to provide said gated color signal when said color killer signal is generated;

(d) burst detector means responsive to a color signal corresponding to said digital chrominance signal, for detecting said burst components from said color signal and generating a burst amplitude signal; and

(e) control signal means coupled to said burst detector means and being responsive to said color control signal, for generating said amplitude control signal in accordance with a difference between said burst amplitude signal and said color control signal; and

processor means coupled to said signal separator means and to said color killer means, for digitally composing RGB signals from said digital luminance signal and said gated color signal, and RGB signals being used as tricolor signals for a color picture tube.

4,609,939

METHOD OF AND APPARATUS FOR AUTOMATICALLY CORRECTING POSITION OF TV CAMERA

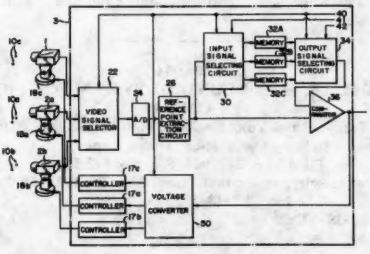
Kunio Kozawa, Toyota; Soichi Ishikawa, Nagoya, and Mamoru Yoshida, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jul. 17, 1984, Ser. No. 631,761

Claims priority, application Japan, Jul. 18, 1983, 58-130626

Int. Cl.⁴ H04N *7/18;* **G01J** *1/00*

U.S. Cl. 358—101 **12 Claims**



1. A method of automatically correcting a position of a TV camera in a measuring system, in which said TV camera takes an image of an object ot be measured to produce a video signal in order to obtain data of measurement, an optical axis of said TV camera being adjustable by a TV camera driving unit, said method comprising the steps of:

(a) taking by a TV camera arranged at a pre-determined position an image of a reference point which is provided in a field of vision of said TV camera;

(b) determining correct position data representing a position of said reference point;

(c) storing said correct position data obtained in step (b) in memory circuits;

(d) taking an image of said reference point by a TV camera whose position is to be corrected;

(e) determining current position data representing a position of said reference point taken by said TV camera whose Position is to be corrected;

(f) comparing the position data obtained in step (e) with the position data obtained in step (b), thereby determining an amount of deviation of said TV camera to be corrected; and

(g) operating said TV camera driving unit in accordance with the amount of deviation determined in step (f) to adjust the optical axis of said TV camera so as to eliminate the deviation in the position of said TV camera.

4,609,940

RADIODIAGNOSTIC INSTALLATION WITH A PATIENT TABLE AND A PRIMARY RADIATION DIAPHRAGM

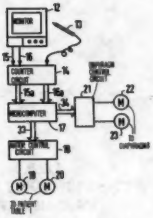
Hans-Joachim Born, Moehrendorf; Hartmut Duschka, Uttenreuth; Gerhard Seyler, Bubenreuth, and Wolfgang Zerl, Herzogenaurach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 17, 1984, Ser. No. 641,796

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1983, 3330552

Int. Cl.⁴ H04N *5/32, 5/30;* **A61B** *6/08*

U.S. Cl. 358—111 **3 Claims**



1. Radiodiagnostic apparatus comprising:

a motor-operated primary radiation diaphragm;

a patient table;

motor means for moving the patient table along two different directions in a plane;

means for reproducing an image of that region of a patient on the patient table which is to be irradiated through the radiation diaphragm, said reproducing means including a monitor;

a light pen for selecting sites on the monitor;

memory means for registering a location of a selected site on the monitor; and

control means for operating the motor means in a manner that that point on the patient which corresponds to said site is brought to the center of said region.

4,609,941

TELEVISION SIGNAL STANDARDS CONVERSION

Michael D. Carr; David G. Morrison, and Richard C. Nicol, all of Ipswich, England, assignors to British Telecommunications, London, England

Filed Nov. 30, 1983, Ser. No. 556,693

Claims priority, application United Kingdom, Nov. 30, 1982, 8234138

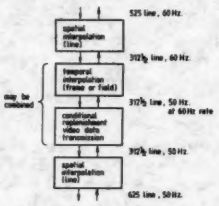
Int. Cl.⁴ H04N *7/01*

U.S. Cl. 358—136 **18 Claims**

1. In a television picture transmission system having a transmitter wherein digital television signals representing successive frames of a picture to be transmitted are compared with representations of earlier frames of a picture previously stored in a first picture store (20) and data relating to changes in elements of the picture are generated and transmitted to a receiver where representations of the earlier frames of the

picture previously stored in a second picture store (43, 44) are altered in response to the transmitted data to reproduce the later frames of the picture, the improvement comprising:

means for transmitting digital television signals representing the picture to be transmitted at a frame rate which is


525 line, 60 Hz.
spatial interpolation (line)
312½ line, 60 Hz.
temporal interpolation (frame or field)
may be omitted
312½ line, 50 Hz. at 60 Hz rate
conditional replenishment video data transmission
312½ line, 50 Hz.
spatial interpolation (line)
625 line, 50 Hz.

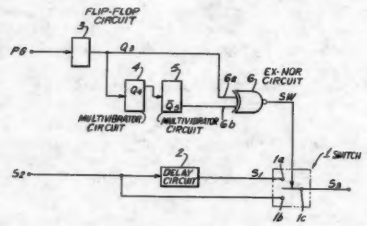
different from the frame rate at which the frames of television signals are later reproduced in the receiver, and the frame rate at which the said digital television signals are transmitted is less than or equal to the lower of the two rates.

4,609,942

METHOD FOR CONVERSION FROM FIELD SIGNAL TO FRAME SIGNAL

Michio Kuribayashi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 10, 1984, Ser. No. 659,317
Claims priority, application Japan, Oct. 11, 1983, 58-188517
Int. Cl.[4] H04N *7/01*
U.S. Cl. 352—140 **4 Claims**



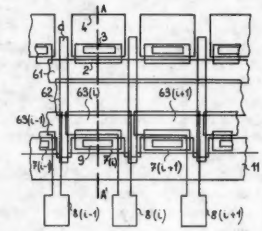
1. A method for conversion from a field signal to a frame signal in which a field signal delayed by a ½ horizontal scanning period and the field signal not subjected to any delay are alternately selected at a time interval of one vertical scanning period by changing over a switch, wherein said switch is changed over under control of a switching pulse which attains a first logic level before the period of preceding equalizing pulses in one field, remains in the first logic level for one vertical scanning period, then changes to a second logic level opposite to the first logic level, attains the first logic level again during the period of preceding equalizing pulses in the next field, and reverts to the opposite logic level again during the period of succeeding equalizing pulses and which repeats the above state at a time interval of two vertical scanning periods.

4,609,943

DEVICE PHOTOSENSITIVE TO INFRA-RED RADIATION

Bernard Munier, Seyssinet Pariset, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 20, 1984, Ser. No. 673,423
Claims priority, application France, Nov. 25, 1983, 83 18845
Int. Cl.[4] H04N *3/14*
U.S. Cl. 358—213 **13 Claims**



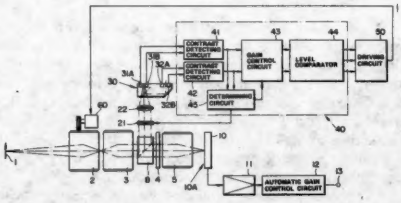
1. A device photosensitive to infra-red radiation, comprising at least one line of several infra-red detectors integrated on a first semiconductor substrate, placed within a cryostat, each detector being connected to means for injecting a quantity of charge as a function of the infra-red radiation received by each detector into a second semiconductor substrate situated within the crysostat, this device comprising means associated with each detector for assuring the storage of the charges in the second substrate and further comprising charge readout means, wherein each injecting means being connected to a first grid kept at a constant potential and being connected to a second grid under said second grid are stored charges coming from a detector, the second grid being connected to a third grid connected to an output of a shift register having parallel outputs, said register successively addressing said third grid associated to each detector of a same line, said third grid controlling access to a diode connected to another diode in the read out means which are common to the detectors of a same line and performing sequential readout of the detectors in said same line.

4,609,944

AUTOMATIC FOCUS CONTROL SYSTEM FOR VIDEO CAMERA

Yasuo Nakada, and Yukihiro Kato, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 24, 1984, Ser. No. 613,571
Claims priority, application Japan, May 25, 1983, 58-90697
Int. Cl.[4] H04N *5/238, 5/232*
U.S. Cl. 358—228 **9 Claims**



1. An automatic focus control system for adjusting a video camera from an unfocused state to a substantially focused state; said system comprising:

a main optical system for conducting light from an object;

a first diaphragm for controlling the volume of light in the main optical system;

first means for photoelectrically converting the light from said object from the main optical system into an imaging signal;

an optical subsystem for conducting a part of the light from said object as conducted by said main optical system;

a second diaphragm for controlling the volume of said light in the optical subsystem;

second means for converting part of the light from said object from said optical subsystem into focusing signals; and

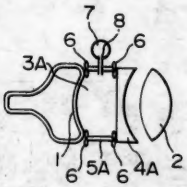
an automatic focus control unit including contrast detecting means responsive to said focusing signals and generating a control signal for controlling said second diaphragm in such a manner as to reduce its effective diameter in the unfocused state and enlarge its effective diameter in the substantially focused state.

4,609,945

VIDEO PROJECTION APPARATUS WITH TEMPERATURE COMPENSATION DEVICE

Masanori Oguino, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 15, 1984, Ser. No. 620,930
Claims priority, application Japan, Jun. 15, 1983, 58-105874
Int. Cl.[4] H04N 5/74
U.S. Cl. 358—237 **4 Claims**



1. In a video projection apparatus including at least a cathode-ray tube, a projection lens and a projection screen, a temperature compensation device comprising a layer of a medium disposed between said projection lens and a faceplate of said cathode-ray tube, said medium having a refractive index n_p decreasing with a temperature rise and having a thickness l_p on an optical axis, thereby compensating a temperature-dependent variation of a focal length of said projection lens, the thickness l_p of said medium layer being selected to satisfy an equation

$$\frac{l_p}{n_p f} \cdot \frac{\Delta n_p}{n_p \Delta T} \cong \frac{0.3K}{2} \cdot \frac{\Delta f}{f \Delta T} \cdot \left(1 + \frac{1}{M}\right)^2$$

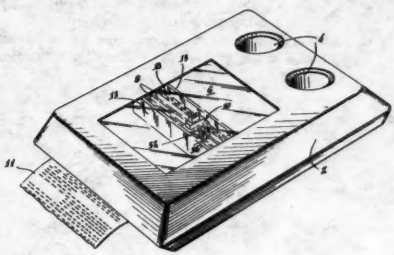
where ΔT is a temperature variation; Δn_p is a variation of the refractive index n_p due to the temperature variation ΔT; f is the focal length of the projection lens; K is a constant representing the proportion of the power of plastic lenses to the total power when the projection lens is of a hybrid type, Δf is a variation of the focal point due to the temperature variation ΔT; and M is the magnification of projected images.

4,609,946

FACSIMILE APPARATUS AND DUPLICATOR

Michael R. Thaler, Cheshire, Conn., assignor to Image Communications Inc., New Milford, Conn.

Division of Ser. No. 390,210, Jun. 21, 1982, Pat. No. 4,476,496.
This application Oct. 5, 1984, Ser. No. 657,916
Int. Cl.[4] H04N 1/04
U.S. Cl. 358—286 **4 Claims**



1. An apparatus for duplicating information comprising:

storage means for storing signals corresponding to information to be duplicated,

means for generating signals corresponding to information recorded on a recording medium, said generating means comprising one or more photodetectors and means for moving said photodetector(s) back and forth across said recording medium, said generating means being coupled at its output to said storage means for supplying said signals to said storage means,

a receiver comprising means for receiving voice signals in a frequency band of 50–1900 Hz and means for receiving data signals in a frequency band of 2000–3000 Hz, said receiver being adapted to be coupled at its input to a telecommunication line for receiving signals from said telecommunication line, said receiver being coupled at an output to said storage means for supplying to said storage means signals representative of the data signals received by said receiver,

a transmitter comprising means for transmitting voice signals in a frequency band of 50–1900 Hz and means for transmitting data signals in a frequency band of 2000–3000 Hz, said transmitter having an input coupled to said storage means for supplying data signals in said storage means to said transmitter, said transmitter being coupled at an output to said telecommunication line for transmitting said voice and data signals through said telecommunication line, and

a printer operatively associated with said storage means and movable with said photodetector(s) for printing information represented by the signals stored in said storage means, whereby the printer provides either a copy of the information recorded on the recording medium or a copy of the information received by said receiver.

4,609,947

VIDEO SIGNAL RECORDING APPARATUS

Kazuo Yamagiwa, Tokyo; Kiyoshi Nishitani, Fujisawa; Koichi Takeuchi, Kamakura, and Seiji Sato, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 24, 1983, Ser. No. 526,062
Claims priority, application Japan, Aug. 25, 1982, 57-147337
Int. Cl.[4] H04N 9/491, 5/78; G11B 5/52
U.S. Cl. 358—310 **28 Claims**

1. A video signal recording apparatus for recording a video signal in a plurality of tracks extending obliquely on a magnetic tape, the video signal being composed of successive frames with each frame having a plurality of fields, comprising:

means for producing horizontal and vertical synchronization

signals, in which the relative times of occurrence of pulses in said vertical synchronization signal are controlled relative to selected fields of said video signal, said pulses being periodic and unequally spaced;

recording means including a tape guide drum having said magnetic tape arranged there around with a wrap angle θ, means for controlling the extent of the wrap angle of said magnetic tape around said tape guide drum so that $360°/\theta \times 525/2 = N$, wherein N is a positive, nonzero integer, first and second rotary heads adapted to come into contact with said magnetic tape and connected to receive said video signals for selectively recording said

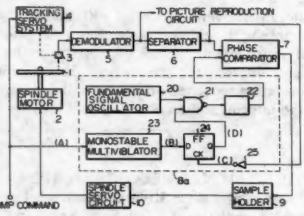
video signals on said magnetic tape in response to said pulses of said vertical synchronization signal, and means for mounting said first and second rotary heads so that a distance between said first and second rotary heads corresponds to a time difference of $(m+0.5)T$ between the time said first rotary head ceases contact with said magnetic tape and said second rotary head commences contact with said magnetic tape, where m is an integer and T is a time corresponding to one horizontal period, whereby the initial times at which said first and second rotary heads apply said fields of said video signal to said magnetic tape are synchronized with said pulses in said vertical synchronization signal.

4,609,948

APPARATUS TO CONTROL TIME BASE FLUCTUATION IN A SIGNAL FROM A DEVICE FOR REPRODUCING RECORDED INFORMATION FROM A RECORDING DISC

Takashi Okano, Tokorozawa, Japan, assignor to Pioneer Video Corporation, Tokyo, Japan

Filed Dec. 6, 1982, Ser. No. 447,286
Claims priority, application Japan, Dec. 8, 1981, 56-197193
Int. Cl.⁴ H04N *5/781*
U.S. Cl. 358—338 **5 Claims**



1. A time base control unit in an apparatus for reading and reproducing information recorded on an information recording disc, said information recorded on the information recording disc in the form of one or more tracks extending circumferentially thereof, the reading and reproducing apparatus has means for generating a jump command signal and includes, (a) rotation driving means for rotating the information recording disc; (b) information pick-up means for reading a recorded information signal from a target track by means of a reading spot aligned onto said target track; and (c) tracking servo means for performing tracking servo control for said reading spot while performing a jump operation of said reading spot from one track to another track in accordance with the jump command, comprising:

sync separating means for separating a sync signal from the reproduction information signal read;

reference signal generating means for generating a reference signal of a prescribed frequency;

phase difference detecting means for detecting a phase relation between said sync signal and said reference signal and for producing a phase difference signal;

time base servo means for compensating the time base fluctuation of said reproduction information signal in accordance with said phase difference signal; and

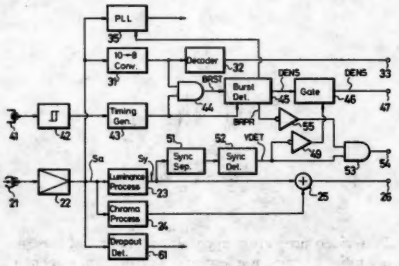
said reference signal generating means includes means for synchronizing the phase of said reference signal relative to said sync signal at the end of or immediately after jump operation with the phase of said reference signal relative to said sync signal at the beginning of said jump operation or immediately after the beginning thereof, in response to said jump command.

4,609,949

MAGNETIC DISC REPRODUCING APPARATUS

Ken Kutaragi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 13, 1985, Ser. No. 733,251
Claims priority, application Japan, May 21, 1984, 59-102056
Int. Cl.⁴ G11B *5/02, 15/12*
U.S. Cl. 360—28 **4 Claims**



1. A magnetic disk reproducing apparatus for reproducing analog and digital information signals which are recorded in respective tracks on a magnetic disk and which include synchronizing and burst signals, respectively, as essential components of the recorded analog and digital information signals, said apparatus comprising:

transducer means in transducing relation with said tracks for reproducing the analog or digital information signals from a selected one of said plurality of tracks while the disk is driven at a predetermined rotational speed;

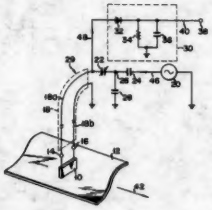
means connected with said transducer means for isolating from the information signals reproduced by said transducer means said synchronizing and burst signals, respectively; and

means for detecting the isolated synchronizing and burst signals, respectively, for indicating when the reproduced information signals are analog and digital signals, respectively.

4,609,950
MAGNETIC HEAD APPARATUS WITH VARIABLE INDUCTANCE

Shu Chiba, and Norikazu Sawazaki, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 22, 1983, Ser. No. 477,858
Claims priority, application Japan, Mar. 29, 1982, 57-48853
Int. Cl.[4] G11B *5/02, 5/127, 20/06*
U.S. Cl. 360—29 14 Claims



1. An apparatus for detecting a magnetic field changing in accordance with information stored on a magnetic recording medium and for producing an electrical information signal corresponding to the magnetic field, said apparatus comprising:

high-frequency signal source means for generating a predetermined high-frequency signal;

plate-shaped magnetic head body means, connected to said high-frequency signal source means to receive the high-frequency signal, for detecting a change in intensity of the magnetic field and for causing change in an inductance thereof, said magnetic body means comprising electrically insulative magnetic material having its inductance changed in accordance with the change in the magnetic field intensity and electrically conductive material for magnetically insulating said magnetic material and for causing the high-frequency signal to flow in said head body means wherein said head body means further includes a head body of a multi-layered structure in which a plurality of first layers made of said electrically insulating magnetic material are formed with one of a plurality of second layers made of said electrically conductive material interposed between each pair of adjacent ones of said first layers;

first circuit means, connected to said head body means and said high-frequency signal source means, for amplitude-modulating the high-frequency signal in response to the change in inductance of said head body means, thereby producing a modulated signal; and

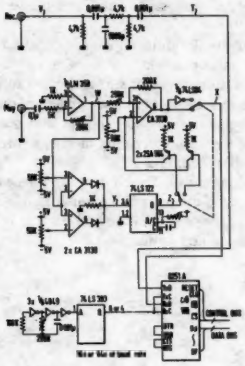
second circuit means, connected to said first circuit means, for receiving the modulated signal to detect an envelope waveform of the modulated signal, and for producing the electrical information signal corresponding to the change in intensity of the magnetic field, which is generated in accordance with the information stored on the magnetic recording medium.

4,609,951
RECORDING AND RECONSTRUCTING DIGITAL DATA

Masahiro Aruga, Berolzheimerstrasse 8, 8500 Nurnberg 60, Fed. Rep. of Germany

Filed Mar. 9, 1984, Ser. No. 588,083
Claims priority, application United Kingdom, Mar. 17, 1983, 8307428
Int. Cl.[4] G11B *5/09, 15/14*
U.S. Cl. 360—46 6 Claims

1. A method of recording digital data in which a digital encoded signal is filtered by a second order highpass filter to generate a succession of pulses from edges of said encoded signal and in which said succession of pulses is recorded on a

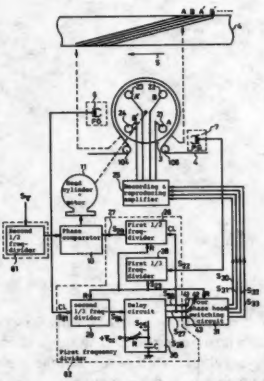


magnetic record carrier and in which said filter has a cut-off frequency in the range of from one to four times the baud rate.

4,609,952
RECORDING AND REPRODUCING APPARATUS

Tadashi Yoshino, Neyagawa, and Yutaka Ohta, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 1, 1985, Ser. No. 761,417
Claims priority, application Japan, Aug. 2, 1984, 59-163140; Dec. 21, 1984, 59-269956
Int. Cl.[4] G11B *21/04*
U.S. Cl. 360—70 3 Claims



1. A recording and reproducing apparatus comprising:

a rotary head cylinder having N (an even number of 4 or more) magnetic heads provided on periphery thereof with uniform angular pitch of 360°/N around its axis of rotation, with their azimuth angle differing alternately each other,

tape driving means for driving a magnetic recording tape by helically winding around said periphery of said rotary head cylinder for an angular range of $360° \times (1-1/N)$ or more around said axis of rotation so that oblique recording tracks are formed on said tape by rotation of said rotary head cylinder and helical driving of said recording tape around and on said rotary head cylinder,

a rotation phase detector for detecting rotation phase of a selected magnetic head among said N magnetic heads,

first frequency dividing means for dividing frequency of output signal of said rotation phase detector to N/(2N−2)times,

second frequency dividing means for dividing frequency of vertical synchronization signal of a video signal to be recorded or an equivalent signal thereto to ½ times,

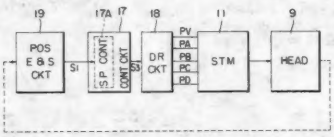
a phase comparator for comparing phases of output signal of said first frequency dividing means and output signal of said second frequency dividing means, to produce a signal of phase difference, and

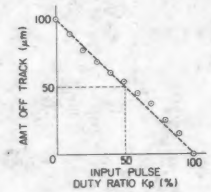
phase controlling means for controlling phase of rotation of said rotary head cylinder in a manner that output signal of phase difference of said phase comparator is controlled to be a predetermined value.

4,609,953
DISK UNIT

Masahiro Mizuno, Chigasaki, and Hiroshi Baba, Fujisawa, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Dec. 11, 1984, Ser. No. 680,506
Claims priority, application Japan, Dec. 15, 1983, 58-236555
Int. Cl.⁴ G11B *5/55, 5/56*
U.S. Cl. 360—78 **3 Claims**



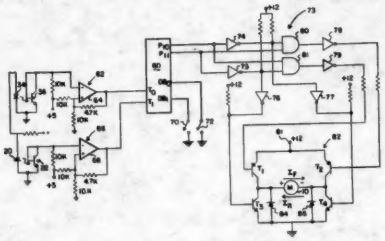


1. A disk unit comprising control means for controlling the stop position of a positioning electric motor and for positioning a head operatively linked with said positioning electric motor on a predetermined one of data tracks on a disk, and positioning error adjustment means for supplying analog signals to stop position adjustment means, said analog signals being related to the positioning error detected by the head, said control means including a control circuit for causing an exciting current which goes high for a time interval T1 and goes low for a time interval T2 during a period T to flow in one of the exciting coils of said positioning electric motor, and for causing an exciting current which goes low during the same time interval T1 and goes high during the same time interval T2 to flow in another exciting coil adjacent to said one of the exciting coils, as a function of the magnitude of said analog signals from said positioning error adjustment means, said stop position adjustment means being operative for adjusting the duration of said time intervals T1 or T2 with respect to said period T.

4,609,954
TRACKING SERVO FOR A DISK PLAYER WITH A DC MOTOR

Richard H. Bolton, East Rochester, and Robert P. Cloutier, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1984, Ser. No. 585,702
Int. Cl.⁴ G11B *21/08*
U.S. Cl. 360—78 **8 Claims**



1. A servo control method for controlling a dc motor interconnected to a playback head in order to move the head between adjacent data tracks recorded on a disk, said method comprising the steps of:

operating the motor to begin moving the head from one track toward an adjacent track;

deriving a first counting signal related to the rotation of the dc motor and the movement of the head therewith between adjacent tracks;

stopping the motor when the first counting signal corresponds to a first count value that provides for the expected coasting characteristics of the motor;

deriving a second counting signal related to the movement of the head while the dc motor is coasting to a stop;

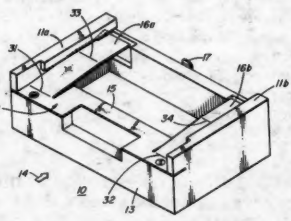
deriving an error signal from the two counting signals; and

modifying said first count value responsive to the value of said error signal after said dc motor has stopped whereby a departure from the expected coasting distance will not accumulate and further affect future track-to-track movements.

4,609,955
LATCHING MECHANISM FOR A TAPE CARRIER

Dewey M. Sims, Jr., Wayne, Mich., assignor to Northern Telecom Limited, Montreal, Canada

Filed Oct. 17, 1983, Ser. No. 542,408
Int. Cl.⁴ G11B *15/00, 5/008, 23/04*
U.S. Cl. 360—93 **7 Claims**



1. A latching mechanism for a tape carrier, said mechanism characterized by:

two spaced apart guide rails, having upper and lower surfaces thereon, one on each side of a recess for accepting a tape carrier, said guide rails serving to receive and to guide said carrier into position;

two resilient biasing members positioned within the recess adjacent said guide rails, in a one-to-one relationship, for acting against a common face of said tape carrier to bias said carrier against said lower surface of the guide rails;

each said biasing member being formed from a single piece of sheet metal and including a projection for engaging a corresponding notch in said tape carrier so as to inhibit the removal of said carrier;

wherein movement adjacent a mouth of the recess of an inserted and latched tape carrier in a direction substantially perpendicular to the guide rails pivots said tape carrier against said lower surface of said guide rails so as to move said biasing members sufficiently to allow said projections to clear said notches and to thereby permit said carrier to be removed.

4,609,956

MAGNETIC DRUM CASSETTE WITH MAGNETIC DRUM HAVING VOICE INFORMATION RECORDED THEREON

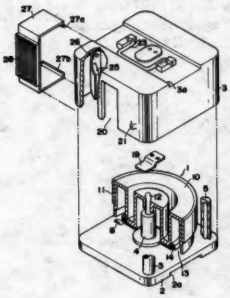
Michihiro Torii, Hamamatsu; Takao Moritomo, Shizuoka; Kaoru Endo, Shizuoka, and Norifumi Ito, Shizuoka, all of Japan, assignors to Fuji Electrochemical Co., Ltd., Tokyo, Japan

Filed Aug. 29, 1983, Ser. No. 527,497

Claims priority, application Japan, Sep. 2, 1982, 57-133743[U] Apr. 1, 1983, 58-48345[U]

Int. Cl.[4] G11B *5/004, 5/55, 21/08, 5/10*

U.S. Cl. 360—100 **5 Claims**



1. A magnetic drum/head system for reproducing a recorded information, comprising a magnetic drum cassette having therein a magnetic drum driven by a capstan, a magnetic head contacting an information track on the magnetic drum for generating selected recorded information, wherein said magnetic drum cassette comprises:

a lower casing having a bearing at its central portion;

an upper casing fitted to said lower casing to form a housing for enclosing therein said magnetic drum;

an oil coating device mounted on resilient means fixed to said housing to slidably contact with the circumference of said magnetic drum;

an opening in said housing for permitting said magnetic head through said opening; and,

a cover, slidably mounted on means formed on said housing, for opening and closing said opening in the housing, thereby protecting said magnetic drum when said cassette is released from said system;

wherein said cover has a cleaner plate for cleaning said magnetic head when said cover is repeatedly slid manually in and out of contact with the magnetic head.

4,609,957

MAGNETIC CARD READER-ENCODER APPARATUS

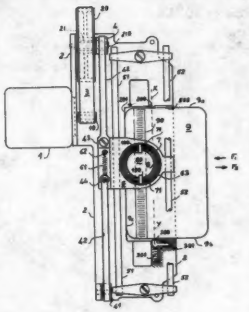
Michel Gentet, Valence, and André Nicolet, Portes les Valance, both of France, assignors to Crouzet, Paris, France

Filed Feb. 1, 1983, Ser. No. 462,780

Claims priority, application France, Feb. 15, 1982, 82 02549

Int. Cl.[4] G11B *25/04, 21/18*

U.S. Cl. 360—101 **4 Claims**



1. A magnetic card reader-encoder apparatus, comprising:

a magnetic read-write means;

a means for maintaining a magnetic card in a determined position in contact with said magnetic read-write means;

means for displacing in a uniform rectilinear movement said read-write means along a magnetizable track of said magnetic card;

a frame;

two parallel rods secured to said frame;

a first pulley;

wherein said means for displacing said read-write means comprises a carriage mounted to slide along said two parallel rods secured to said frame;

a motor, mounted on said frame for driving said carriage;

first longitudinally elastic transmission belt means driven by said motor for filtering vibrations of said motor and driving said first pulley;

second longitudinally inelastic transmission belt means;

a second pulley, having a diameter smaller than the diameter of said first pulley and driven by said first pulley, for driving said second transmission belt means; and

tension spring means on said second transmission belt means for driving said carriage.

4,609,958

PRECISION BEARING FOR RECIPROCATING A MAGNETIC HEAD

Ronald D. Irvin, Poway; Karl B. Offerman, and Lynn C. Jacobs, both of San Diego, all of Calif., assignors to Cipher Data Products, Inc., San Diego, Calif.

Filed May 29, 1984, Ser. No. 614,519

Int. Cl.[4] G11B *5/55, 21/08*

U.S. Cl. 360—106 **19 Claims**

1. A bearing for supporting a transducer for movement relative to a magnetic storage medium comprising:

an open-ended elongate hollow cylindrical positioner post;

means for rigidly mounting one end of the post to a frame element;

an elongate carriage surrounding the post for supporting the transducer;

a plurality of precision roller means;

means for rotatably mounting the roller means to the carriage so that the roller means engage the post at longitudinally and circumferentially spaced locations to permit the carriage to reciprocate along the post;

a positioner shaft extending coaxially through the post and having a threaded segment;

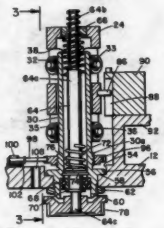
tracking means rigidly mounted at one end of the carriage and screwed over the threaded segment of the positioner shaft; and

means for preventing rotation of the carriage relative to the frame element while permitting the carriage to reciprocate along the post;

whereby rotation of the positioner shaft will move the transducer relative to the frame element.

11. A carriage assembly for supporting a transducer for movement relative to a magnetic storage medium comprising:

an elongated positioner post having a bore extending along the length thereof;



means at one end of said positioner post for rigidly securing said positioner post to a support member;

an elongated carriage surrounding said positioner post;

a plurality of precision roller means rotatably mounted on the carriage for engaging the positioner post at longitudinally and circumferentially spaced positions for supporting the carriage for reciprocation along the positioner post;

a positioner shaft extending coaxially through the bore of the positioner post and having a threaded segment; and

nut means mounted on the carriage and engaging the threaded segment of the positioner shaft for connecting said carriage to the positioner shaft so that rotation of the positioner shaft moves the carriage along the positioner post.

4,609,959

DEVICE FOR POSITIONING A MAGNETIC HEAD TO VARIOUS TRACKS OF A MAGNETIC TAPE

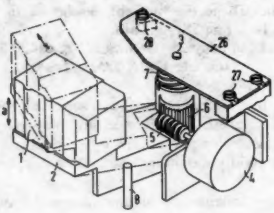
Guttorm Rudi, Fjellhamar, Norway, assignor to Tandberg Data A/S, Oslo, Norway

Filed Nov. 25, 1983, Ser. No. 555,152

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1982, 3244149; May 16, 1983, 3317719

Int. Cl.[4] G11B *21/08, 21/22, 5/55*

U.S. Cl. 360—106 **10 Claims**



1. A device for positioning a magnetic head relative to a plurality of tracks of a magnetic tape in a magnetic tape recorder device, comprising:

a magnetic tape recorder housing frame having a shaft and means for mounting the shaft in a fixed manner and such that a longitudinal axis of the shaft extends in a given direction generally parallel to a width direction of the magnetic tape;

a magnetic head carrier mounted for axial movement along said shaft and having a magnetic head secured to a first end thereof;

a worm drive means and a screw drive means operationally associated with a second end of said head carrier for selectively positioning said magnetic head relative to selected tracks of the magnetic tape;

said worm drive means comprising a worm gear axially extending in a direction generally perpendicular to said given direction and driven by an associated drive motor and an associated worm wheel mounted about said shaft and axially extending generally parallel to said given direction and being axially and rotatably movable relative to said shaft;

said screw drive means comprising an inside thread on said worm wheel and an operationally associated outside thread on said shaft;

said magnetic head carrier being displaceably mounted on said shaft non-positively connected to said worm gear; and

means for securing said magnetic head carrier against rotation during rotary movement of said worm wheel and for causing said head carrier to follow the axial movement of said worm wheel.

4,609,960

ROTARY THIN FILM MAGNETIC HEAD DEVICE

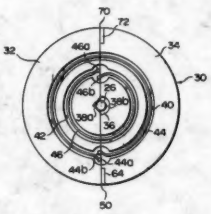
Yoshiharu Fujioka, Yamato, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 25, 1983, Ser. No. 516,957

Claims priority, application Japan, Jul. 30, 1982, 57-133543

Int. Cl.[4] G11B *5/52, 21/04, 5/16*

U.S. Cl. 360—108 **11 Claims**



1. A rotary thin film magnetic head device for recording or reproducing a signal on or from a recording medium, comprising:

a disc-shaped rotor of a magnetic material having first and second semicircular rotor halves and centering means, the first and second halves comprising first and second joining end faces, respectively, which are adhered to each other to constitute the rotor, and the centering means being disposed at the center of rotation of the rotor so as to control the positioning of the rotor's center of rotation;

a pair of magnetic heads formed respectively at two ends of the first joining end face, each of the magnetic heads having a magnetic core film, a coil film pattern energized to drive the magnetic core film, and a gap formed at the distal end of the magnetic core film;

rotating means for driving the rotor around the center of rotation thereof so as to cause the pair of magnetic heads to be in slidable contact with the recording medium; and

a rotary transformer for coupling the magnetic heads and an external circuit, the rotary transformer comprising two annular grooves formed on a surface of the rotor to be

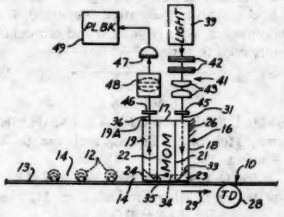
concentric with the center of rotation; two rotor coil patterns formed respectively in the two annular grooves, one of the two rotor coil patterns having two ends at a contact portion at the first and second joining end faces on one side of the centering means, and the other of the two rotor coil patterns having two ends at a contact portion at the first and second joining end faces on the other side of the centering means; two stator coils spaced apart from the respective rotor coil patterns by a predetermined interval, and connected to the external circuit; two pairs of connecting conductors formed on the first joining end face, each of the pairs of connecting conductors being connected to the two ends of the rotor coil pattern corresponding thereto; and the coil film pattern of each of the magnetic heads having a cross portion crossing the magnetic core films, and two pairs of lead portions extending from opposite ends of the cross portion to the connecting conductors corresponding thereto, one of the pair of lead portions being connected to one pair of the connecting conductors and the other of the pair of lead portions being connected to the other pair of connecting conductors, whereby the signal from the external circuit is transferred to the magnetic heads by magnetic coupling between the stator coils and the rotor coil pattern corresponding thereto.

4,609,961

FARADAY-EFFECT MAGNETO-OPTIC TRANSDUCER

John H. Jacobs, Altadena, Calif., assignor to Datatape Incorporated, Pasadena, Calif.

Filed Aug. 20, 1984, Ser. No. 642,225
Int. Cl.[4] G11B *5/127, 11/10*
U.S. Cl. 360—114 **3 Claims**



1. In a magneto-optic transducer apparatus for use with a magnetic storage device having an information-bearing surface producing magnetic fields, said transducer apparatus including a planar element having a light transmission property that is functionally related to an applied magnetic field, and means for projecting an incoming beam of polarized light onto said magneto-optic transducer apparatus, the improvement comprising:

(a) a first substantially transparent prism arranged adjacent a surface of said planar element in the path of the incoming polarized light beam, and a second substantially transparent prism adjacent the opposing surface of said planar element, each of said prisms having a first major surface respectively contacting the opposing surfaces of said planar element to form a unitary structure supporting said planar element in a position substantially orthogonal to and immediately adjacent the information-bearing surface of such a magnetic storage device, to cause the light transmission property of said element to vary under the influence of a magnetic field emnating from such magnetic storage device; and

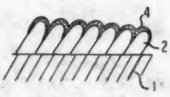
(b) a first light reflector and a second light reflector integral with corresponding second major surfaces of said first prism and said second prism, respectively, said first reflector and said second reflector being arranged in the path of the polarized light beam on opposing sides of said planar element for directing the light beam along a unidirectional optical path through both said prisms and said planar element, the optical path being (1) in intersecting relationship with the periphery of said planar element to be positioned immediately adjacent such magnetic storage device, to enhance the influence of the magnetic field applied to said planar element, and (2) substantially normal to the interface between said first prism and said planar element and the interface between said second prism and said planar element, to limit light loss due to reflection of light passing initially through said first prism of said unitary structure and into said planar element and subsequently passing through said planar element and entering said second prism of said unitary structure on the opposite side of said element, as polarized light is transmitted unidirectionally through said magneto-optic transducer apparatus.

4,609,962

MAGNETIC RECORDING MEDIUM HAVING IMPROVED WEATHER RESISTANCE

Yoshihiro Arai; Akira Nahara; Makoto Nagao, and Kiyotaka Fukino, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 4, 1984, Ser. No. 596,789
Claims priority, application Japan, Apr. 4, 1983, 58-59076
Int. Cl.[4] G11B *23/00, 5/74*
U.S. Cl. 360—131 **10 Claims**



1. A magnetic recording medium comprising a non-magnetic planar support base having provided thereon:

a ferromagnetic metal thin film comprised of column-shaped clusters of ferromagnetic particles having longitudinal axes inclined to the surface plane of the support base, formed by inclined evaporation of the ferromagnetic particles; and

a layer of chromium or a chromium compound covering the surfaces of said column-shaped clusters, formed by (i) inclined evaporation of the chromium or chromium compound at an incidence angle of the vapor flow of the chromium or chromium compound in the same direction as that of the incidence angle used to form the ferromagnetic metal thin film, or (ii) vacuum evaporation of the chromium or chromium compound under a pressure ranging from 4×10^{-4} Torr to 2×10^{-1} Torr.

4,609,963

SPINDLE APERTURE REINFORCEMENT FOR A FLOPPY DISK

Alfred W. Conner, Palo Alto, and J. Reid Anderson, Los Altos Hills, both of Calif., assignors to Verbatim Corporation, Sunnyvale, Calif.

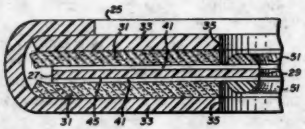
Continuation of Ser. No. 466,791, Feb. 16, 1983, abandoned, which is a division of Ser. No. 208,516, Nov. 20, 1980, Pat. No. 4,387,114. This application Feb. 5, 1985, Ser. No. 698,739
Int. Cl.[4] G11B *23/03, 5/84*
U.S. Cl. 360—133 **16 Claims**

1. An improved flexible recording disk having a central aperture for inclusion into a floppy disk assembly, said floppy disk assembly including said flexible recording disk and an envelope for enclosing said flexible disk, said envelope being adapted to permit rotation of said flexible disk, the improvement comprising:

an integral reinforcing means bonded onto a first circular side surface of said flexible recording disk about the central aperture thereof for providing reinforcement to said

disk in the region around the central aperture, said integral reinforcing means being a single member made of a single homogeneous material which constitutes both a reinforcement member and a bonding means.

15. In a flexible recording disk for use in a floppy disk assembly, said recording disk having a central aperture and a reinforcement member secured to at least a first circular side surface of said flexible recording disk about its central aperture, the improvement comprising:



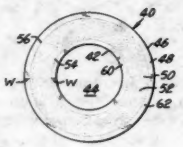
said reinforcement member being formed by a solidifiable material which, as it solidifies, bonds to said disk, to form (1) a generally annular member reinforcing said disk about its central aperture, and (2) a binder binding said annular member to said disk.

4,609,964

REINFORCEMENT FOR MAGNETIC RECORDING DISK

Alvin A. Sobel, Paramus, N.J., assignor to Coronet Paper Corporation, Carlstadt, N.J.

Filed Oct. 11, 1983, Ser. No. 540,884
Int. Cl.[4] G11B *5/82*
U.S. Cl. 360—135 **24 Claims**



1. In a magnetic recording disk reinforcement including an annular member for placement around the central aperture of the disk and an adhesive on a substantially planar adhesive area of the annular member for securing the member to a generally corresponding substantially planar area of the disk, the annular member having an inner peripheral edge for placement in general alignment with the central aperture of the disk and an outer peripheral edge, and the adhesive area having an perimeter adjacent the inner peripheral edge of the annular member and an outer perimeter adjacent the outer peripheral edge of the annular member, the improvement comprising:

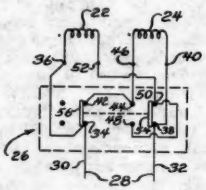
a generally annular spacing placed between the inner perimeter of the adhesive area and the inner peripheral edge of the annular member, the spacing being great enough to preclude exuding of the adhesive beyond the inner peripheral edge as a result of forces applied to the adhesive by operational element-of a drive mechanism during use of the magnetic recording disk in the drive mechanism, and small enough to maintain the annular member secure to the disk closely adjacent the inner peripheral edge of the annular member, whereby exuded adhesive will not interfere with the operational elements of the drive mechanism.

4,609,965

MAGNETIC CLUTCH

William A. Baker, Milwaukee, Wis., assignor to PT Components, Inc., Indianapolis, Ind.

Filed Nov. 9, 1984, Ser. No. 669,683
Int. Cl.[4] H01H *47/06*; F16D *27/06*
U.S. Cl. 361—160 **8 Claims**



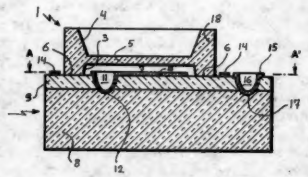
1. Apparatus for energizing a magnetic clutch including input drive means selectively connectable at times to output drive means, comprising electromagnetic coil means contained in said input means, first coil winding means forming first resistance means within said coil means, second coil winding means forming second resistance means within said coil means, a power source providing energy to said first and said second coil winding means, switching means connected to said first and said second coil winding means, said switching means being effective at times to connect said first and said second coil winding means in parallel and at other times in series, whereby said clutch is initially energized at a maximum ampere turns start mode providing maximum speed of response when said first and second coil winding means are connected in parallel and said clutch is thereafter energized to a minimum ampere turns run mode when said first and second coil winding means are connected in series.

4,609,966

ABSOLUTE PRESSURE TRANSDUCER

Heikki Kuisma, Helsinki, Finland, assignor to Vaisala Oy, Helsinki, Finland

Filed Oct. 4, 1985, Ser. No. 784,198
Claims priority, application Finland, Oct. 11, 1984, 843989
Int. Cl.[4] H01G *7/00*
U.S. Cl. 361—283 **13 Claims**



1. A capacitive absolute pressure transducer comprising:

a base plate of an insulating material

a fixed capacitor electrode disposed on the base plate,

a moving capacitor electrode diaphragm of silicon, at least partly aligned with the fixed capacitor electrode, and spaced from it so that a hermetically sealed chamber is formed between the fixed electrode and the moving diaphragm electrode, and

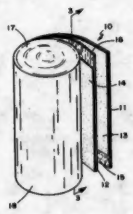
electrical contacts attached to the fixed electrode and moving diaphragm electrode, respectively,

the base plate being bonded with a conductive material wafer to obtain a laminated substrate,

the diaphragm electrode of the capacitor being essentially an integrated structure with the surrounding and essentially thicker collar part, and

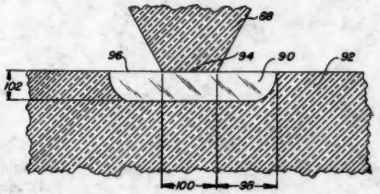
the electrical path to the fixed capacitor electrode in the area of the vacuum chamber being formed by a well that penetrates the base plate to the conductive wafer.

4,609,967
DIELECTRIC FLUID FOR A CAPACITOR
Vandos Shedigian, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.
Filed Oct. 15, 1985, Ser. No. 787,045
Int. Cl.[4] H01G *4/22*
U.S. Cl. 361—315 **5 Claims**



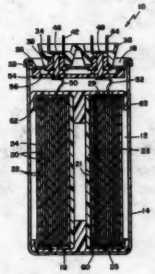
3. A capacitor, comprising:
a housing,
a pair of convolutely wound metallized film electrodes enclosed within said housing; and
a dielectric liquid consisting essentially of 75 volume % glyceryl triacetate and 25 volume % 3,4-epoxycyclohexylemethyl-3,4-epoxycyclohexane carboxylate.

4,609,968
GLASS INLAYS FOR USE IN BONDING SEMICONDUCTOR WAFERS
Leslie B. Wilner, Palo Alto, Calif., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.
Continuation-in-part of Ser. No. 611,765, May 18, 1984. This application Apr. 30, 1985, Ser. No. 728,893
Int. Cl.[4] H01G *7/00*; H01L *21/306*; G01L *9/12*
U.S. Cl. 361—320 **15 Claims**



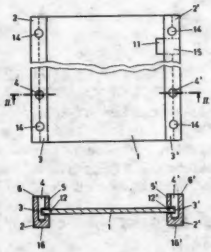
1. A method for bonding two surfaces of the same semiconductor together, characterized by the steps of
(a) selecting in a first selecting step two semiconductor surfaces to be bonded;
(b) selecting in a second selecting step one of said two semiconductor surfaces from said first step;
(c) etching a groove into the surface selected from said second selecting step;
(d) said etching step being over said selected surface between said two surfaces selected from said first selecting step;
(e) filling said groove obtained from said etching step with powdered glass;
(f) fusing said powdered glass from said filling step into a solid mass;
(g) polishing in a first polishing step the resulting exposed surface of said solid glass mass obtained from said fusing step to the extent necessary to obtain a desired bonding surface;
(h) polishing in a second polishing step the other of said semiconductor surfaces obtained from said first selecting step; and
(i) anodically bonding the polished surfaces obtained from said first and second polishing steps.

4,609,969
DIELECTRIC FLUID FOR METALLIZED POLYPROPYLENE FILM CAPACITORS
Vandos Shedigian, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.
Filed Oct. 22, 1984, Ser. No. 663,131
The portion of the term of this patent subsequent to Jun. 4, 2002, has been disclaimed.
Int. Cl.[4] H01G *4/22, 4/08*
U.S. Cl. 361—323 **6 Claims**



1. In a metallized polypropylene film capacitor including a casing containing a capacitor roll section having a pair of spaced apart electrodes, a polypropylene sheet for separating the electrodes, and a dielectric fluid adjacent said electrodes, in said casing, the dielectric fluid comprising about 90% to about 100% by volume Glyceryl Tri (acetoxystearate).

4,609,970
BOARD HOLDING DEVICE, IN PARTICULAR FOR RF PRINTED CIRCUIT BOARDS, AND A METHOD OF MANUFACTURING IT
Bruno Hilpert, Kiissaberg, Fed. Rep. of Germany, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland
Filed Mar. 22, 1984, Ser. No. 592,279
Claims priority, application Switzerland, Mar. 25, 1983, 1649/83
Int. Cl.[4] H05K *1/18*
U.S. Cl. 361—399 **5 Claims**



1. A high-frequency circuit device, comprising:

a circuit board with a first board edge and a second board edge opposed to said first board edge;

a first elongate frame part having a length extending in parallel with said first board edge;

a second elongate frame part having a length extending in parallel with said second board edge, each of said first and second frame parts having the form of a bar with a rectangular cross section, each of said first and second frame parts having on a first side a groove parallel to the length of said frame parts, said circuit board being inserted with said first and second board edges into said grooves of said first and second frame parts respectively, said circuit board having at least one metallized surface over those regions of said first and second board edges which lie within said grooves, and said circuit board being soldered to said frame parts with the solder making a close connection between said metallized regions and said frame parts; and

at least one solder duct extending from each of said grooves to a second side of a respective frame part orthogonal to said first side.

4,609,971

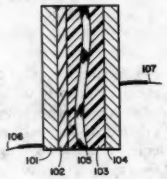
ELECTROLYTIC CAPACITOR WITH POLYMER CONDUCTOR

Jesse S. Shaffer, Columbia, S.C., assignor to North American Philips Corporation, New York, N.Y.

Filed Aug. 11, 1983, Ser. No. 522,072

Int. Cl.⁴ H01G *9/00*

U.S. Cl. 361—433 **7 Claims**



1. A dry electrolytic capacitor comprising:

a metal anode foil;

an insulating oxide layer disposed on the surfaces of the anode foil;

a solid body of a conductive p-doped polyacrylonitrile polymer electrolyte, disposed in intimate physical contact with outer surfaces of the oxide layer;

anode contact means electrically connected to the anode foil; and

cathode contact means electrically connected to the polymer body.

4,609,972

METHOD FOR THE MANUFACTURE OF POROUS VITREOUS CARBON

Martin Edeling, Essen, and Ulrich Gebhardt, Langensendelbach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

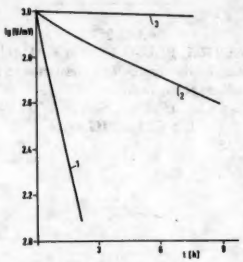
Filed Aug. 7, 1985, Ser. No. 763,534

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1984, 3429794

Int. Cl.⁴ H01G *9/00*; C01B *31/00*

U.S. Cl. 361—433 **15 Claims**

13. An electrochemical double-layer capacitor having at least one electrode comprising macroporous vitreous carbon prepared by hardening and pyrolysis of thermosetting carbonizable resins, characterized by the feature that about 1 to 10 weight-percent of a resin soluble salt of a fatty acid having



about 10 to about 20 carbon atoms which can be volatilized without residue, is included in the resin.

4,609,973

METALLIZED PLASTIC FILM ELECTRIC CAPACITOR

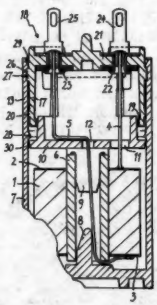
Giancarlo Testi, Casalecchio di Reno, Italy, assignor to Italfarad S.p.A., Bologna, Italy

Filed Dec. 4, 1984, Ser. No. 678,140

Claims priority, application Italy, Dec. 23, 1983, 5140/83[U]

Int. Cl.⁴ H01G *9/06*

U.S. Cl. 361—433 **2 Claims**



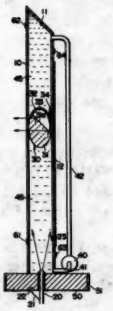
1. A metallized plastic film electric capacitor, including capacitor plates whereto ends of leads are attached, said metallized plastic film electric capacitor comprising a cylindrical case and a small plunger, said cylindrical case having an extension, said small plunger being guided sealingly within said extension of said cylindrical case, said ends of said leads being connected to said capacitor plates, said capacitor plates being connected to said extension of said cylindrical case, said small plunger being adapted to move through an axial distance effective to result in said leads being broken or electrically disconnected, upon the internal pressure of said metallized plastic film electric capacitor exceeding a preset level, said small plunger being of cup-like configuration and comprising a bushing portion, said bushing portion having an outer collar, said bushing portion being further formed with an inner annular ridge, said outer collar being adapted to seal against the inside surface of said extension of said cylindrical body, said small plunger further comprising a cover, said metallized plastic film capacitor further comprising capacitor rheophores, said capacitor rheophores being attached to said cover.

4,609,974

LIGHT RADIATOR

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Japan

Filed Jun. 11, 1985, Ser. No. 743,245
Claims priority, application Japan, Jun. 15, 1984, 59-124299
Int. Cl.[4] F21V 7/04
U.S. Cl. 362—32 15 Claims



1. A light radiator, characterized in that said light radiator comprises a transparent cylinder, an optical conductor for guiding light rays into said cylinder through one end of said cylinder, optical means movably accommodated in said cylinder for reflecting said light rays guided into said cylinder from said optical conductor and radiating said light rays outside said cylinder, and driving means for moving said optical means along an axis direction of said cylinder, said optical means being constructed with a transparent member of elliptic globe shape having a short diameter approximately equal to the inner diameter of said cylinder and comprising an air chamber having a reflection surface for reflecting light rays guided into said cylinder and radiating the same outside said cylinder, said driving means comprising optical oil filled in said cylinder and a liquid pump having an end portion communicating with the end portion of said cylinder and said pump having another end portion communicating with an opposite end portion of the cylinder, and said optical means being moved in said cylinder by use of said liquid pump.

4,609,975

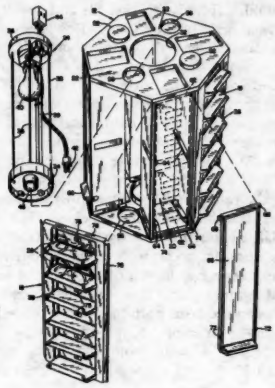
EYEGLASS DISPLAY CASE

Vincent G. Badolato, Oswego Summit, #47, Lake Oswego, Oreg. 97034, and Billy G. Epperson, Aloha, Oreg., assignors to Vincent G. Badolato, Lake Oswego, Oreg.

Filed Sep. 6, 1984, Ser. No. 648,035
Int. Cl.[4] A47F 11/10
U.S. Cl. 362—125 20 Claims

1. Apparatus for storing and displaying eyeglasses, comprising:

a first module having a central axis and including a plurality of radially extending, circumferentially spaced storage compartments for non-displayed storage of eyeglass inventory, said compartments defining a plurality of radially extending spaces therebetween; and



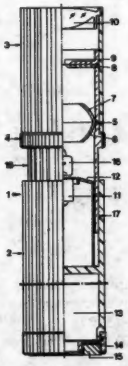
display means for glasses disposed within said spaces.

4,609,976

COMBINATION FLASHLIGHT AND WARNING LIGHT

Udo Geissler, Munich, Fed. Rep. of Germany, assignor to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH, Munich, Fed. Rep. of Germany

Filed Mar. 29, 1985, Ser. No. 717,706
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1984, 3412437
Int. Cl.[4] F21L 7/00
U.S. Cl. 362—202 17 Claims



1. Combination flashlight-warning light (1) having

an elongated tubular housing including

a cylindrical body portion (2) and a head portion (3) which is, at least in part, cylindrical;

an optical system (5, 8, 10) including a reflector (5) located within the housing;

a halogen incandescent lamp (16) located at an end zone of the body portion (2) facing the head portion (3),

the body portion (2) defining a battery chamber (13) therein;

means (17) axially slideably connecting the head portion (3) and the body portion (2) to provide for axially slideable

movement of the head portion with respect to the body portion ,

wherein said slideable connection means (17) comprises

a hollow cylindrical tube (17) telescopically received within the cylindrical body portion (2) and the at least in part cylindrical head portion (3), said hollow cylindrical tube surrounding at least the halogen incandescent lamp, regardless of the sliding position of the hollow cylindrical tube, and wherein the portion (18) of the hollow cylindrical tube surrounding the halogen incandescent lamp (16) is transparent, said hollow cylindrical tube forming a connection element for said body portion (2) and said head portion (3) while permitting relative movement thereof; and

wherein, the reflector (5) is secured to the head portion (3) and the slideable connection means (17) has a slide distance large enough to remove the reflector secured to the head portion from the bulb of the halogen incandescent lamp and expose at least a filament of the halogen incandescent lamp (16) to a free space between the body portion (2) and the head portion (3) to provide for 360° light radiation—with respect to a longitudinal axis of the elongated tubular housing-from the halogen incandescent lamp (16).

4,609,977

INCANDESCENT LAMP-BASE ASSEMBLY, PARTICULARLY FOR AN AUTOMOTIVE-TYPE HALOGEN INCANDESCENT LAMP

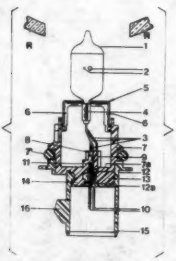
Fritz Eckhardt, Dettingen; Peter Helbig, Sontheim/Brenz, and Walter Schönherr, Giengen-Hüben, all of Fed. Rep. of Germany, assignors to Patent-Treuhand-Gesellschaft für elektrische Glühlampen mbH, Munich, Fed. Rep. of Germany

Filed Aug. 22, 1985, Ser. No. 768,043

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1984, 3431191; Aug. 7, 1985, 3528399

Int. Cl.[4] F21V *29/00*

U.S. Cl. 362—267 **21 Claims**



1. Incandescent lamp-base assembly, particularly for association with an automotive reflector (R) having

a single-ended bulb (1, 21);

current leads (3, 23) extending from a pinch or press seal from the bulb;

terminal prongs (10, 30) for connection of the lamp to an external current supply;

electrical connections between said current supply leads and the terminal prongs;

a base cup (7, 27) having a sleeve portion, open at one end, facing the bulb, and a bottom wall (7*a*);

a metal holding cap(5,25) attached to the bulb and fitted on the base cup to secure the bulb to the base cup;

openings (8) formed in the bottom wall (7*a*) of the base cup for passage of the current leads (3, 23) therethrough,

and comprising, in accordance with the invention,

means for retaining the electrical terminal prongs (10, 30) and protecting the electrical connections between the current leads (3, 23) and the terminal prongs including

an attachment element (12, 32) of insulating material having a wall portion (12*a*, 32*a*) formed with openings,

the terminal prongs (10, 30) being passed through said openings in the wall portion,

said wall portion (12*a*, 32*a*) being spaced from the bottom wall (7*a*) of the base cup (7, 27) defining therewith a chamber (13, 33); and

wherein the electrical connections between the terminal prongs (10, 30) and the current leads (3, 23) are located in said chamber (13, 33).

4,609,978

LIGHTING APPARATUS WITH ILLUMINANCE EQUALIZING LENS

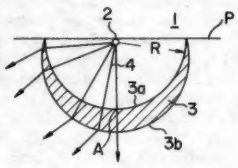
Kou-Chang Hsieh, and Michiya Suzuki, both of Yonezawa, Japan, assignors to President of Yamagata University, Yamagata, Japan

Filed Apr. 18, 1984, Ser. No. 601,647

Claims priority, application Japan, May 9, 1983, 58-80277

Int. Cl.[4] F21V *5/00, 5/04*

U.S. Cl. 362—335 **19 Claims**



1. A lighting apparatus with an illuminance equalizaing lens, comprising: an illumination light source; and a lens for illuminating a luminous vector from the light source onto an illuminated surface, an inner surface of the lens being formed as a continuous surface to receive the luminous vector from the light source in the normal direction thereof, and in order to obtain uniform illuminance on the illuminated surface, the distance r(ϕ) from the light source to an outer surface of the lens being defined by the following equation:

$$r(\phi) = r(\phi_1)\exp\left\{\int_{\phi_1}^{\phi - \phi_1} \tan\theta_i d\phi\right\}$$

wherein

$$\tan\theta_i = \frac{\sin(\theta(\phi) - \phi)}{n - \cos(\theta(\phi) - \phi)}$$

$$\theta(\phi) = \tan^{-1}\left\{\frac{1}{\cot\theta_2 + (\cot\theta_1 - \cot\theta_2)\dfrac{\int_{\phi_2}^{\phi} I(\phi)d\phi}{\int_{\phi_2}^{\phi_1} I(\phi)d\phi}}\right\}$$

ϕ: angle from a reference plane which is perpendicular to a line passing through the light source and the center of the outer surface

ϕ_1: angle from the reference plane to the periphery of the outer surface

ϕ_2: angle from the reference plane to the center of the outer surface

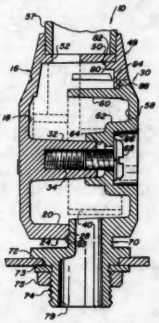
θ_i: incident angle of the luminous vector to the normal of the outer surface
$\theta(\phi)$: angle of refraction of the luminous vector to the reference plane
θ_1: angle of refraction of the luminous vector to the reference plane at $\phi=\phi_1$
θ_2: angle of refraction of the luminous vector to the reference plane at $\phi=\phi_2$
n: refractive index of the lens
$I(\phi)$: illuminance distribution pattern from the illumination light source.

4,609,979

SWIVEL ASSEMBLY

Paul Kristofek, Hickory Hills, Ill., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Mar. 25, 1985, Ser. No. 715,679
Int. Cl.[4] F21S *1/02*; F16C *11/00*
U.S. Cl. 362—427 **19 Claims**



1. A swivel for mounting a lighting fixture or the like to an external mounting member comprising in combination:

a hollowing housing including a generally scooped-shaped mounting body having at least a semi-circular portion at one end and including a first back wall, a peripheral sidewall extending substantially perpendicularly from said first back wall along the periphery thereof defining an open side and an interior of said body, a circular boss extending perpendicularly from said first back wall coaxial with said semi-circular portion into said body member interior toward said body member open side, a circular cup-shaped cap including a second back wall, a circular side wall extending substantially perpendicularly from said second back wall defining an open side of said cap and an interior of said cap, a clearance hole in said second back wall coaxial with said circular sidewall, said first boss rotatably journaled in said clearance hole with the open side of said body member facing the open side of said cap;

a threaded fastener passing through said clearance hole and being threadedly received in a threaded hole in said first boss releasably securing said cap to said body member at selected angular positions; and

a cover removeably attached to said body member over said open side thereof adjacent said cap at an end of said body member opposite said semi-circular one end, said cover including an arcuate shaped edge contiguous with a portion of said circular side wall of said cap;

means for mounting said housing to said external mounting means; and

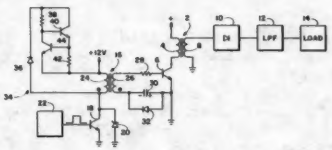
means for mounting said housing to said light fixture.

4,609,980

SWITCHING POWER SUPPLY WITH TRANSISTOR DRIVE CIRCUIT

Gilbert A. Hoffman, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 5, 1985, Ser. No. 708,603
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—20 **4 Claims**



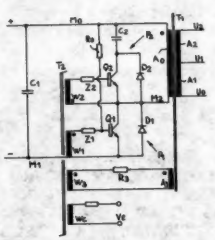
1. An improved switching power supply of the type having a base drive transformer with a primary winding, a secondary winding and a core of magnetic material, a switch device connected to one end of the primary winding, and a transistor having its base connected to one end of the secondary winding and its emitter connected to the other end of the secondary winding so that, when the primary winding and the switch device are connected between a source of DC voltage and the switch device is closed intermittently, collector current is developed in the transistor, the improvement comprising a current-dependent voltage clamp connected across a winding of the transformer for preventing the voltage across the transformer winding from exceeding a predetermined limit so long as the magnetizing current, flowing in the primary winding when the switch device is opened, does not exceed a predetermined value.

4,609,981

DIRECT CURRENT CONVERTER FOR SWITCHED MODE POWER SUPPLY

Piero Gamba, Strambino, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Jul. 11, 1984, Ser. No. 629,628
Claims priority, application Italy, Jul. 11, 1983, 67749 A/83
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—22 **5 Claims**



1. A direct current converter for a switched mode stablized power supply, comprising a power transformer having a primary winding to be supplied with a high voltage trapezoidal direct current wave having a first direction to supply the transformer with a magnetizing energy, a secondary winding for supplying at least one output voltage during one of a pair of operating phases of said transformer, a first control circuit including a first transistor for controlling the supplying of said trapezoidal direct current wave in a first operating phase of said pair, a second control circuit including a capacitor for accumulating part of said magnetizing energy during a second operating phase, a second transistor for causing said capacitor to supply to said primary winding a current due to the accumu-

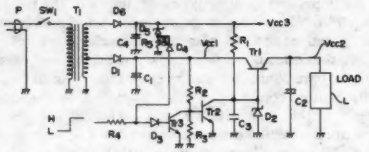
lated energy and having a direction opposite to said first direction, a diode associated with said second control circuit for causing said capacitor to accumulate the relevant energy, and a control transformer having a primary winding controlled by said power transformer, a pair of oppositely poled secondary windings on said control transformer operative alternately to control said first and second transistors.

4,609,982

POWER ON-OFF CONTROL CIRCUIT

Ken Gohda, Utsunomiya, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 28, 1984, Ser. No. 655,640
Claims priority, application Japan, Jan. 19, 1984, 59-8322
Int. Cl.⁴ H02P *13/24*
U.S. Cl. 363—89 **6 Claims**



1. A power ON/OFF control circuit comprising:

power supply means for providing an input voltage to an electronic apparatus;

dividing means for producing two output voltages from said input voltage wherein one of said output voltages is a reference voltage and a second of said output voltages is a driving voltage;

detection means for detecting the presence or absence of said reference voltage;

stabilizing means for stabilizing said driving voltage and applying said stabilized driving voltage to a load;

control means, operatively connected to said detecting means, for producing control signals in response to the presence or absence of an input voltage or the detection of said reference voltage by said detecting means; and

switching means for turning said stabilizing means ON and OFF wherein said switching means is operatively connected to said control means and will turn OFF said stabilizing means when said control signals indicate an absence of said reference voltage or an absence of said input voltage.

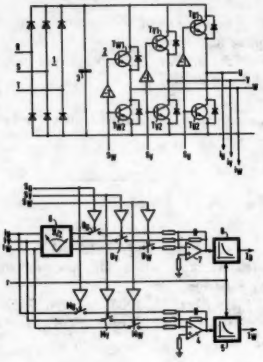
4,609,983

APPARATUS FOR DETERMINING ACTIVE AND/OR REACTIVE CURRENT AND/OR THE POWER THEREOF IN AN INVERTER WITH A GIVEN INPUT D-C VOLTAGE, ESPECIALLY IN A PULSED INVERTER

Michael Braun, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 2, 1985, Ser. No. 729,978
Claims priority, application Fed. Rep. of Germany, May 4, 1984, 3416520; Jul. 9, 1984, 3425240
Int. Cl.⁴ H02P *13/20*
U.S. Cl. 363—98 **9 Claims**

1. Apparatus for determining the instantaneous power of at least one phase of a load connected inverter having at least one switch coupled to the phase, particularly a pulsed inverter, comprising switch means and means for providing a measurement signal corresponding to the phase current of the inverter to the switch means, the switch means being actuated by a switching signal, which determines the switching state of the at least one switch of the inverter coupled to the phase, a signal



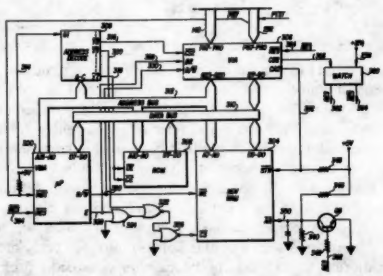
corresponding to the instantaneous power of the phase being generated at the output of said switch means.

4,609,984

AUTOMATIC BALER WITH MANUAL OVERRIDE OF MICROPROCESSOR CONTROLLED FUNCTIONS

Richard P. Strosser, Akron, and Carl E. Bohman, New Holland, both of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Apr. 13, 1984, Ser. No. 599,906
Int. Cl.⁴ G06F *15/00*
U.S. Cl. 364—130 **8 Claims**
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 49 Pages)



1. In an automatic baling machine having a plurality of manual input switches, a twine dispensing means, a drive motor for driving said twine dispensing means, means connecting said input switches to inputs of said signal processing circuit, said signal processing circuit being responsive to said input switches for selectively producing output signals to energize said motor, the improvement comprising:

a signal processing circuit including a programmable microprocessor means responsive to a first and a second of said input switches for generating and storing a sequence of wrap control words, and subsequently producing output signals to energize said motor in accordance with said stored sequence of wrap control words; and,

means connecting said first and second switches to said drive motor, said drive motor being energized from said signal processing circuit when said signal processing circuit is functioning properly and energized by selectively operating said switches when said signal processing circuit is not

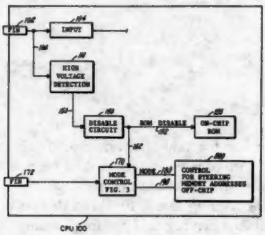
functioning properly, said switches being utilized to wrap a bale even though said signal processing circuit is not functioning properly, and also being utilized to control said signal processor to store control words for automatically controlling the wrapping of a bale.

4,609,985

MICROCOMPUTER WITH SEVERABLE ROM

Harold W. Dozier, Carrollton, Tex., assignor to Thomson Components-Mostek Corporation, Carrollton, Tex.

Filed Dec. 30, 1982, Ser. No. 454,799
Int. Cl.[4] G06F *13/00*
U.S. Cl. 364—200 **4 Claims**



1. A single-chip microcomputer comprising:

a central processing unit (**100**) having at least two alternative memory access modes;

input/output means (**104**) within said central processing unit (**100**) and connected to at least one external pin (**102**) thereof; and

on-chip read-only memory (**155**) within said central processing unit (**100**); which microcomputer includes:

disabling means (**150**), coupled to said pin (**102**) and responsive to application of a voltage in excess of 5 volts to said external pin (**102**) of said microcomputer and having a ROM disable output (**152**) connected to said on-chip read-only memory (**155**), to permanently disable said on-chip read-only memory (**155**), said disabling means including a resistance element (**162**) of limited current capacity, having first and second terminals, said second terminal being connected to ground and said first terminal being connected to a ROM-disable node (**163**), said node (**163**) being connected to a high-current capacity transistor (**156**) and to said ROM disable output (**152**), said node (**163**) being normally held at a predetermined first voltage state by connecting said node (**163**) to said second, grounded, terminal thereof, whereby said application of a voltage in excess of five volts results in said transistor (**156**) being gated open and causes said resistance element (**162**) to be destroyed and said ROM-disable node (**163**) to change to a second voltage; and

means (**170, 200**), connected to said output (**152**) of said disabling means (**150**) and to a mode input (**172**), for accessing external memory.

4,609,986

PROGRAMMABLE LOGIC ARRAY DEVICE USING EPROM TECHNOLOGY

Robert F. Hartmann, San Jose; Yiu-Fai Chan, Saratoga; Robert Frankovich, Cupertino, and Jung-Hsing Ou, Sunnyvale, all of Calif., assignors to Altera Corporation, Santa Clara, Calif.

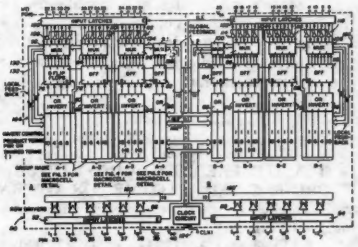
Filed Jun. 14, 1984, Ser. No. 620,451
Int. Cl.[4] G06F *7/38*
U.S. Cl. 364—200 **18 Claims**

1. A programmable integrated circuit logic array device, comprising:

a plurality of input terminals for receiving input signals;

a plurality of I/O terminals for receiving input signals and/or transmitting output signals;

a first plurality of macrocells each including at least a first programmable AND array having a first plurality of memory cells arranged in addressable rows and columns, each said cell being individually programmable to contain logic data corresponding to the memory state of the cell, first sensing means connected to said first AND array, said first sensing means being responsive to certain ones of said input signals and operative to detect the memory state of one or more of said cells and to develop a corresponding first data signal, first signal storage means, first feedback



means, and first multiplexing means for selectively coupling said first data signal to one of said I/O terminals, to said first storage means, or to said first feedback means; and

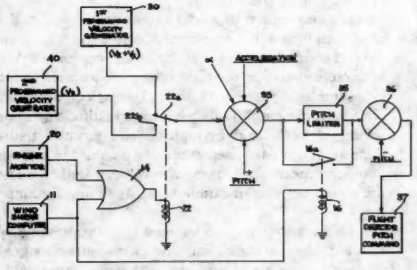
a plurality of data buses including a global input signal bus for coupling input signals from said input terminals to a first group of cells in the AND arrays of each said macrocell, a local feedback bus for coupling signals applied to the feedback means of at least some of said macrocells to a second group of cells of at least some of said macrocells, and a global feedback bus for coupling data signals applied to some of said feedback means to a third group of cells of all of said AND arrays of said macrocells.

4,609,987

AIRCRAFT GUIDANCE SYSTEM FOR TAKE OFF OR GO-AROUND DURING SEVERE WIND SHEAR

Leonard M. Greene, White Plains, N.Y., assignor to Safe Flight Instrument Corporation, White Plains, N.Y.

Filed Mar. 9, 1983, Ser. No. 473,594
Int. Cl.[4] G05D *1/08*
U.S. Cl. 364—433 **7 Claims**



1. In a system for controlling the pitch of an aircraft during take-off and go-around operations, said system including means for controlling the pitch of the aircraft in response to a first predetermined programmed minimum airspeed signal (V_2+V_x) wherein V_2 is a second predetermined programmed

airspeed signal and V_x is a safety factor, and in accordance with signals representing the measured angle of attack (α), acceleration and pitch of the aircraft, and further including means for limiting the pitch of the aircraft to a predetermined maximum value, the improvement comprising:

means for automatically substituting said second predetermined programmed airspeed signal (V_2) for said first programmed minimum airspeed signal (V_2+V_x) in response to the signal representing an unsafe wind shear condition, and

means for substituting a pitch control signal in accordance with said second predetermined programmed airspeed signal (V_2) for the output of the means for limiting the pitch of the aircraft, in response to said signal representing the unsafe wind shear condition,

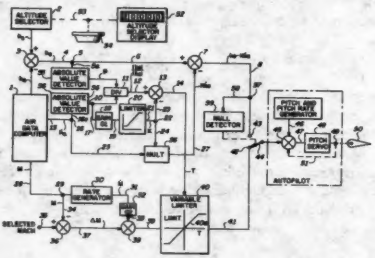
whereby the pitch attitude of the aircraft can be automatically increased above the predetermined maximum value to enable the aircraft to safely handle said wind shear condition.

4,609,988

AUTOMATIC PREDICTION AND CAPTURE OF A PRESELECTED ALTITUDE FOR AIRCRAFT

Terry L. Zweifel, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 17, 1983, Ser. No. 476,090
Int. Cl.[4] G05D *1/08*
U.S. Cl. 364—433 **13 Claims**



1. Automatic flight control apparatus for controlling an aircraft to approach, initiate and thereafter execute a capture flight path to a preselected altitude comprising

(a) means for providing a signal proportional to the error between the existing altitude of the aircraft and said preselected altitude,

(b) means for providing a signal proportional to the actual altitude rate of the aircraft,

(c) means responsive to said altitude rate signal and to a predetermined value of normal acceleration for providing a signal characterizing the shape of said capture flight path at captive initiation for controlling the aircraft to follow an asymptotic flight path to said preselected altitude, a circular flight path to said preselected altitude or a combination of both, said asymptotic and circular paths all dependent upon the magnitude of said altitude rate signal,

(d) unipolar means for varying the value of said characterizing signal between maximum and minimum limiting values,

(e) means for providing a combined signal representative of said altitude rate signal and said characterizing signal,

(f) means responsive to said characterizing signal, said altitude rate signal, and said altitude error signal for providing a signal representative of a time period prior to the initiation of said capture flight path, and

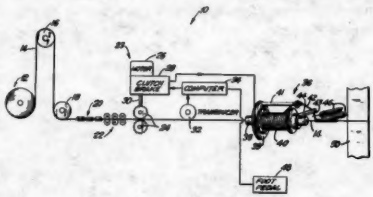
(g) means responsive to an algebraic sum of said altitude error signal and said combined signal to provide a pitch command signal for executing said capture flight path.

4,609,989

METHOD AND MACHINE FOR MANUFACTURING ARTIFICIAL BRANCHES

Larry Squarci, Catskill, N.Y., assignor to Hudson Valley Tree, Inc., Newburgh, N.Y.

Filed Apr. 2, 1984, Ser. No. 596,060
Int. Cl.[4] G06F *15/46;* **A01N** *3/00;* **A47G** *33/04;* **H01F** *11/04*
U.S. Cl. 364—468 **11 Claims**



1. A device for manufacturing artificial branches from a continuous coil of wire and individual branch tips by wrapping with a continuous filament comprising:

means for feeding said wire through said device;

motor means driving said feeding means;

means for starting and stopping the feeding of said wire;

rotating spool means for mounting said continuous filament of wrapping material, said wire being fed through said rotating spool, said rotating spool including means for wrapping said filament about said wire, said spool being rotated as said wire is fed and being stopped when said feeding means are stopped;

transducer means for measuring the amount of wire being fed through said device, said transducer means including an output corresponding to the amount of wire fed through said device; and

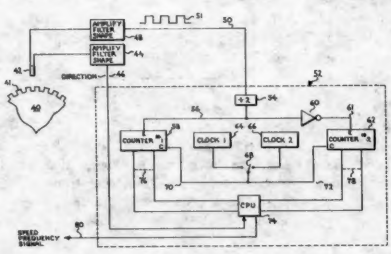
a stored program computer having an input coupled to said transducer means and an output coupled to said starting and stopping means to stop and restart said feeding means and said rotating spool means in timed relation to the amount of fed wire through said device to thereby permit an operator to position said branch tips proximate to said wire for securing said tips to said wire by wrapping with said filament.

4,609,990

FREQUENCY MEASUREMENT SYSTEM

James W. Sember, Roanoke, and Loren H. Walker, Salem, both of Va., assignors to General Electric Company, Salem, Va.

Filed Aug. 6, 1984, Ser. No. 638,003
Int. Cl.[4] G01R *23/02*
U.S. Cl. 364—484 **15 Claims**



1. A method of providing an output signal having a value

representative of the anticipated instantaneous frequency of an alternating signal comprising the steps:

(a) determining the apparent frequency of said alternating current signal at the end of a half cycle of said alternating current signal;

(b) deriving from successively determined apparent frequencies a rate of change in frequency; and,

(c) developing said output signal as a function of the last determined apparent frequency and a last determined rate of change in frequency.

4,609,991

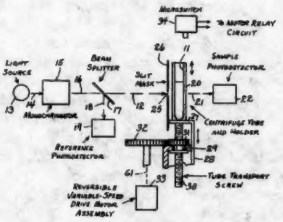
AUTOMATED SYSTEM FOR DETERMINING THE MOLECULAR WEIGHT AND/OR CONCENTRATION OF MACROMOLECULES VIA SEDIMENTATION EQUILIBRIUM

Allen P. Minton, Wheaton; Arun K. Attri, Bethesda; James V. Sullivan, Bowie, and Paul Fitze, Mount Airy, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jul. 19, 1983, Ser. No. 515,169

Int. Cl.[4] G06F *15/46*; G01N *1/10*

U.S. Cl. 364—499 **23 Claims**



1. A method of measuring the concentration gradient of solute in solution with a solvent in an optically transparent cylindrical centrifuge tube having a concentration gradient of solute along the cylindrical axis of said centrifuge tube, comprising

(a) fitting said centrifuge tube, with said concentration gradient of solute therein, into a holder having a cylindrical bore, defined by a non-reflective bore surface, adapted for tightly fitting said centrifuge tube therein, an exterior shape having two parallel faces and a pair of vertical slits through said parallel faces of said exterior shape defining a transverse radiation passage including, when said centrifuge tube is fit into said cylindrical bore, said centrifuge tube;

(b) placing said holder, with said centrifuge tube therein, in an upright position into an optically transparent cuvette having flat parallel faces and an interior shape which is essentially the same as that of said exterior shape of said holder and being of an internal diameter slightly larger than that of said holder so as to securely position said holder in said cuvette interior;

(c) supporting the cuvette, with said holder and said centrifuge tube therein, in an upright position;

(d) passing a fixed beam of radiant energy transversely through the upright cuvette, with said holder and said centrifuge tube therein, along said transverse radiation passage;

(e) moving said cuvette, with said holder and said centrifuge tube therein, axially through a range of movement; and

(f) measuring the absorbancy of said fixed beam at a plurality of positions along said range of movement.

13. Apparatus for measuring the concentration gradient of solute in a cylindrical, optically transparent centrifuge tube, formed by the prior application of a sedimenting force, comprising a holder having a cylindrical bore therein, said cylindrical bore being defined by a non-reflective bore surface and adapted for tightly fitting said cylindrical centrifuge tube therein, an exterior having flat parallel faces and a pair of vertical slits through said parallel faces of said exterior defining a transverse radiation passage, including the central axis of said cylindrical bore;

an optically transparent cuvette having flat parallel faces and an interior shape which is essentially the same as that of the exterior shape of said holder and being of an internal diameter slightly larger than that of said holder; means to move said cuvette, with said holder having said centrifuge tube therein, axially through a predetermined range of movement;

a source of radiant energy to direct radiant energy from said source through said cuvette and along said transverse radiation passage; and

means to measure the absorbancy of said beam at a plurality of positions along said range of movement.

4,609,992

SYSTEM FOR MONITORING TORSION DAMAGE TO A COMPOSITE LINE OF SHAPES THROUGH A DRIVING MACHINE AND A DRIVEN MACHINE

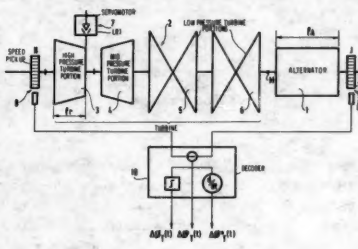
Jean-Claude Bray, Belfort, France, assignor to Alsthom-Atlantique, Paris, France

Filed Jan. 20, 1984, Ser. No. 572,333

Claims priority, application France, Jan. 20, 1983, 83 00843

Int. Cl.[4] G01M *7/00*; G06F *15/20*

U.S. Cl. 364—508 **1 Claim**



1. A monitoring system for monitoring torsion damage, to a composite line of shafts passing through a driving machine and a driven machine, said driven machine being controlled by a servomotor, said monitoring system including first and second devices providing signals V_H and V_J representative of the speeds of rotation at two widely separated points H and J along the line of shafts, a third device determining parameters of the opposing torque, means using the signals provided by the first, second and third devices to determine the values of stresses in various zones M of the line of shafts, and means responsive to said stress values to determine metal damage in said zones m, the improvement wherein said third device for determining the parameters of the opposing torque comprises:

first means responsive to the signals V_H and V_J for providing a signal $\Delta\phi_T(t)$ representative of the angle of twist between the points H and J;

second means supplied with the signal $\Delta\phi_T(t)$ and with a signal dL(t)/dt, which is the derivative of a signal L(t) proportional to the travel of the servomotor, for providing a signal $\Delta\phi_m(t)$ representative of the portion of the angle of twist due to the driving torque;

third means for taking the difference between the signal $\Delta\phi_T(t)$ and the signal $\Delta\phi_m(t)$ and for providing a signal $\Delta\phi(t)$ for providing parameters of the opposing torque;

a first threshold device supplied with the signal $d\Delta\phi_T(t)/dt$ to trigger said second means when said signal exceeds a given threshold; and

a second threshold device supplied with the signal dL(t)/dt

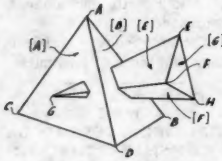
to trigger the second means when said signal exceeds a given threshold.

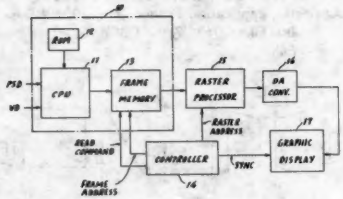
4,609,993

GRAPHIC DISPLAY SYSTEM HAVING ANALOG INTERPOLATORS

Kyoichi Shimizu, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Japan

Filed Sep. 16, 1983, Ser. No. 532,975
Claims priority, application Japan, Sep. 17, 1982, 57-162059
Int. Cl.[4] G09B 9/08, 1/02
U.S. Cl. 364—522 6 Claims





1. In a system for displaying a three-dimensional object defined by a plurality of planes on a two-dimensional raster screen, each of the planes being represented by an equation $Ax+By+Cz=D$, where x, y and z are the axes of a three-dimensional coordinate system and A, B and C are integers proportional to the direction cosines of each of said planes and D is a constant, the x- and y-axes respectively extending in horizontal and vertical directions and the z-axis extending in a depth direction perpendicular to said x- and y-axes, wherein said direction cosine A being represented by an exponent and a mantissa, said system including means for generating first, second and third digital signals representing respectively said exponent, mantissa and integer C, a circuit arrangement comprising:

a digital-to-analog converter for converting said second digital signal into a mantissa representing voltage;

a plurality of series connected resistors having a plurality of taps between successive resistors;

first switching means for applying said mantissa representing voltage to one of said taps in response to said third digital signal to develop incremental potentials at said taps;

an analog-to-digital converter;

second switching means for selectively applying said incremental potentials to said analog-to-digital converter in accordance with the location of a raster scan point on said screen;

means for shifting the output of said analog-to-digital converter in digit position so that it justifies to a most significant digit position; and

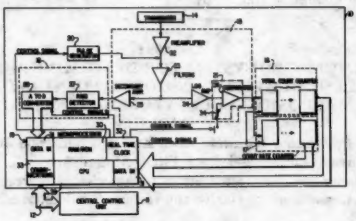
means for subtracting the number of the shifted digit positions from the first digital signal, the outputs of the subtracting means and shifting means representing an incremental depth of each of said planes at said raster scan point.

4,609,994

APPARATUS FOR CONTINUOUS LONG-TERM MONITORING OF ACOUSTIC EMISSION

M. Nabil Bassim, and Kris Tangri, both of Manitoba, Canada, assignors to The University of Manitoba, Winnipeg, Canada

Filed Jan. 16, 1984, Ser. No. 570,866
Int. Cl.[4] G01S 5/18; G06F 15/46
U.S. Cl. 364—551 33 Claims



1. Apparatus suitable for continuous long-term monitoring of acoustic emissions, comprising:

(a) a plurality of detector-analyzer units, each for placement in a discrete pre-selected location, each detector-analyzer unit including:

(i) an acoustic detector for detecting acoustic emission and providing an output signal representative of the acoustic emission;

(ii) signal processing means coupled to the detector and receiving the output signal thereof and providing at least one derivative output signal having characteristics correlatable with preselected characteristics of the output signal of the detector; and

(iii) a microprocessor coupled to the signal processing means for receiving the at least one derivative output signal thereof, including means for determining a current value of each of a set of emission parameters from the at least one derivative output signal, means for storing a set of base values for each of the set of emission parameters, means for periodically comparing the current value of each of the set of emission parameters with the base value thereof to determine the existence of a problem situation, and means for providing a warning signal if the current value of any of the set of emission parameters exceeds the base value thereof; and

(b) a central control unit remote from and coupled by communication means to each of said detector-analyzer units, for receiving any warning signals generated by any of the detector-analyzer units.

4,609,995

PRIORITY CONTROLLER

Kouki Hasebe, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 17, 1983, Ser. No. 505,172
Claims priority, application Japan, Jun. 25, 1982, 57-109511
Int. Cl.[4] G06F 3/04
U.S. Cl. 364—900 8 Claims

1. A priority controller of the type which selects a request signal from request signals simultaneously produced by plural independent request circuits, said controller comprising:

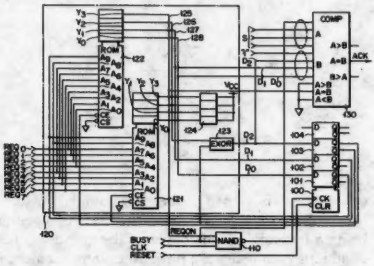
register means for storing information identifying one of said request circuits which has been granted the highest relative priority at a first instant in time;

priority encoder means, connected to receive first and second sets of request signals produced by said request circuits, each set of signals consisting of the same number of request signals, and also connected to receive the information stored in said register means, for producing information according to the request signals and the information stored in said register means, said information identifying

one of said request circuits which is to be granted the highest relative priority at a second time later than said first time, said priority encoder means comprising:

first ROM means for producing predetermined indicia selected as a function of first address data applied thereto obtained by combining a portion of information stored in said register means with each of said request signals, said portion excluding a first predetermined bit of said information stored in said register means,

second ROM means for producing predetermined indicia selected as a function of second address data applied thereto obtained by combining said portion of information stored in said register means with information obtained by



exchanging the positions of the first and second sets of request signals, said first and second ROMs producing the same indicia when the same address data is applied thereto, and

output means for selecting the predetermined indicia produced by a selected one of said first and second ROM means, the selected indicia indicating the request circuit having the updated highest relative priority, said output means including means for selecting between the indicia produced by said first and second ROM means in accordance with information stored in said register means; and

controlling means for controlling said register means to store the information produced by said priority encoder means at said second time.

4,609,996

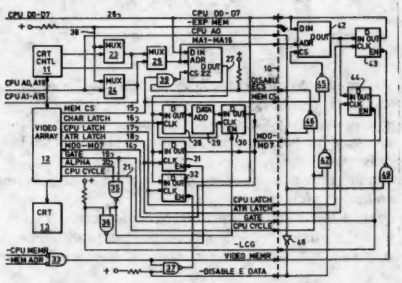
MEMORY ACCESS SYSTEM FOR A COMPUTER SYSTEM ADAPTED TO ACCEPT A MEMORY EXPANSION MODULE

David A. Kummer, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 12, 1983, Ser. No. 522,893

Int. Cl.[4] G06F *13/00*

U.S. Cl. 364—900 **4 Claims**



1. A computer system comprising:

(a) a central processor unit (CPU) having a parallel n+1 bit memory address output comprising bits A(0) through A(n), of which bits A(0) and A(n) are respectively the lowest and highest order bits, and n is an integer;

(b) a processing subsystem (PS) having a parallel n+1 bit memory address output comprising bits A(0) through A(n), of which bits A(0) and A(n) are respectively the lowest and highest order bits;

a memory address logic system (MALS) having logic inputs, and address inputs coupled to said memory address outputs of the CPU and the PS, and having an n bit memory address output;

(d) a base memory having 2^n locations and an n bit address input coupled to the memory address output of said MALS;

(e) a memory expansion module (MEM) comprising an expansion memory having 2^n locations and an n bit address input, and a control system having control outputs;

(f) coupling means for removably coupling said MEM to said MALS, including means for removably coupling said address input of the expansion memory to the memory address output of said MALS, and for removably coupling the control outputs of said control system to the logic inputs of said MALS;

(g) said MALS being switched from a first condition to a second condition on connection of the control outputs of the control system of said MEM through said coupling means to said logic inputs, and being responsive, in said first condition, to address bits A(0) through A(n-1) in each set of address bits from the CPU or from the PS to address an individual location in the base memory, and being responsive, in said second condition, to each set of address bits A(0) through A(n) from the CPU to address an individual location within one of the two memories or to bits A(1) through A(n) in each set of address bits from the PS to simultaneously address a pair of locations, comprising a location in each of said memories.

4,609,997

INPUT PROCESSOR

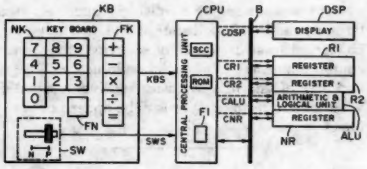
Shigeru Matsuyama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 720,473, Apr. 8, 1985, abandoned, which is a continuation of Ser. No. 529,667, Sep. 6, 1983, abandoned, which is a continuation of Ser. No. 265,159, May 19, 1981, abandoned. This application Sep. 18, 1985, Ser. No. 777,853

Claims priority, application Japan, May 30, 1980, 55-71542

Int. Cl.[4] G06F *9/06, 7/38*

U.S. Cl. 364—900 **39 Claims**



1. An input processor for processing digits of data and for storing and retrieving a plurality of digits for repeated use in forming data to be processed, said processor comprising:

processing means for receiving and for processing data;

input means for inputting digits of data into said processing means;

memory means coupled to said processing means for storing a desired M-digits of data out of N-digits of data input into said processing means by said input means, M being no greater than N;

mode setting means connected to said processing means and

settable in a first mode and a second mode, in said first mode said mode setting means causing said memory means to store said M-digits of data and in said second mode said mode setting means permitting said M-digits of data to be read out from said memory means; and

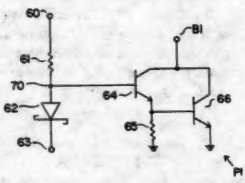
instructing means, comprising an execution key, coupled to said processing means and to said mode setting means; said processing means being responsive to actuation of said execution key when said mode setting means is set in said second mode to cause said M-digits of data to be read out from said memory means and to be appended as the less significant digits of data to the digits of data input by said input means immediately prior to actuation of said execution key, said appended M-digits of data and said digits of data input by said input means immediately prior to actuation of said execution key together thereby forming a plurality of digits of data to be processed by said processing means.

4,609,998

HIGH CONDUCTANCE CIRCUIT FOR PROGRAMMABLE INTEGRATED CIRCUIT

Robert J. Bosnyak, Los Gatos; Hua T. Chua, Los Altos Hills; Donald Goddard, Cupertino, and Sing Wong, Sunnyvale, all of Calif., assignors to Monolithic Memories, Inc., Santa Clara, Calif.

Filed Dec. 15, 1983, Ser. No. 562,506
Int. Cl.[4] G11C *17/00*
U.S. Cl. 365—96 **15 Claims**



1. Programming circuit for selectively causing a programming current to flow through a fusing device, said fusing device having a first lead connected to a first reference voltage and having a second lead, said programming circuit comprising:

a first terminal connected to said second lead of said fusing device;

a first transistor having a collector, an emitter, and a base, wherein said collector is connected to said first terminal;

a second transistor having a collector connected to said first terminal and to said collector of said first transistor, a base connected to said emitter of said first transistor, and an emitter connected to a second reference voltage, wherein said base of said first transistor receives a signal defining whether said fusing device is to be opened or is to remain intact.

4,609,999

RAM MEMORY CELL WITH ELECTRICALLY PROGRAMMABLE NON-VOLATILE MEMORY ELEMENT.

Paolo Rosini, Monza, Italy, assignor to SGS-ATES Componenti Elettronici S.p.A., Catania, Italy

Filed Jan. 20, 1984, Ser. No. 572,453
Claims priority, application Italy, Jul. 27, 1983, 22256 A/83
Int. Cl.[4] G11C *11/40, 7/00*
U.S. Cl. 365—154 **5 Claims**

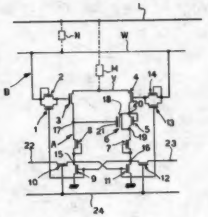
1. A memory cell comprising:

a voltage supply line;

first and second circuit portions interconnected to form a bistable circuit, the circuit portions normally being alternately conducting and non-conducting;

a control switch element in each of said circuit portions, said elements being joined to the supply line;

a non-volatile memory element also included in one of the circuit portions and operably connected to said control switch elements whereby when voltage to said supply line is interrupted or when suitable control devices are operated, the control switch element in the then conducting circuit portion is rendered non-conductive and the memory element is caused to be programmed in one or the other of two electrical states, the state of programming being a function of whichever of the circuit portions was conducting immediately prior to commencement of programming, said programmed memory element being operative upon resumption of voltage to the supply line, or discontinuance of the operation of said control devices, to cause the bistable circuit to resume normal operation with conduction starting in that circuit portion which was conducting immediately prior to commencement of memory element programming.

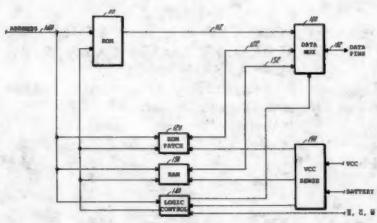


4,610,000

ROM/RAM/ROM PATCH MEMORY CIRCUIT

Robert D. Lee, Denton, Tex., assignor to Thomson Components-Mostek Corporation, Carrollton, Tex.

Filed Oct. 23, 1984, Ser. No. 663,926
Int. Cl.[4] G11C *11/40*
U.S. Cl. 365—189 **8 Claims**



1. An integrated circuit memory system comprising:

a read-only memory;

a patch-memory on a substrate common to said read-only memory for patching predetermined blocks of said read-only memory;

an input address bus connected to said read-only memory and said patch memory;

a control logic unit comprising decoding circuitry for enabling a predetermined portion of said patch memory in response to a predetermined address on said address bus; and

output means responsive to said predetermined address for connecting data from either said read-only memory or said patch memory to at least one input/output terminal, characterized in that:

said memory system further comprises a nonvolatile random-access memory, sharing a common address space with said read-only memory, said random access memory and said read-only memory combining to fill said address space;

each of said random-access memory and said patch-memory comprises an array of volatile memory cells;

said random-access memory is controlled by memory overhead circuitry, having a write control pin, for reading data out from and writing data into that portion of said array of volatile memory cells within a random-access portion of said common address space;

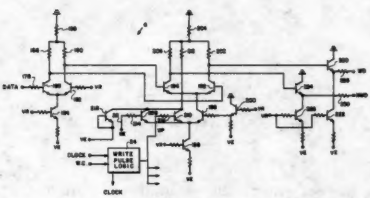
said patch-memory and said random-access memory are both connected to a voltage-maintenance circuit containing circuit means responsive to a power supply voltage and to at least one battery voltage for maintaining data in said patch-memory and said random-access memory when said power supply voltage is below a predetermined threshold, whereby data in said array of volatile memory cells is preserved during periods when said power supply voltage is low.

4,610,001

WRITE AMPLIFIER

Richard H. Ong, Phoenix, and Peter C. Economopoulos, Scottsdale, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Oct. 3, 1983, Ser. No. 538,310
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—189 **4 Claims**



1. A memory write amplifier for a digital computer memory unit, said memory write amplifier having a read mode and a write mode of operation, said amplifier comprising:

a data input amplifier stage having a data input terminal for data signals having two magnitudes, said data input amplifier including a differential amplifier having two inputs, the data input terminal being coupled to one input of the differential amplifier and a reference signal having a fixed magnitude coupled to the other input, the magnitude of the fixed reference signal being intermediate the magnitudes of the data signal, said data input amplifier stage producing output signals having a first set of magnitudes when the magnitude of the data signal is less than that of the reference signal and a second set of magnitudes when the magnitude of the data signal is greater than that of the reference signal;

an intermediate stage differential amplifier coupled to receive the output signals from the input stage differential amplifier, said intermediate stage differential amplifier including mode control means for conditioning said write amplifier selectively to the read or the write mode in response to a mode control signal having two magnitudes said mode control means comprising a differential amplifier comparator for comparing the magnitude of the said mode control signal with a fixed reference signal having a magnitude intermediate magnitudes of the control signal, said control means differential amplifier providing a first current path for energizing current when said control signal is of a lower magnitude than said control reference signal and a second current path for said energizing current when said control signal is of a greater magnitude than said control reference signal, one of said current paths including said intermediate stage differential amplifier the other of said current paths comprising a bypass around the intermediate stage differential amplifier; and

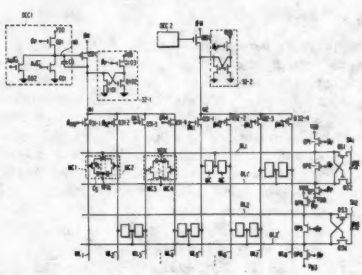
output stage amplifier means having a pair of output terminals, said output terminals producing output signals when said amplifier is in its write mode having magnitudes determined by the data signal applied to the data input terminal of the data input stage amplifier; and, when said amplifier is in its read mode, said output terminals producing substantially identical output signals.

4,610,002

DYNAMIC MEMORY CIRCUIT WITH IMPROVED NOISE-PREVENTION CIRCUIT ARRANGEMENT FOR WORD LINES

Shouji Kaneko, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 28, 1983, Ser. No. 546,759
Claims priority, application Japan, Oct. 28, 1982, 57-189717
Int. Cl.[4] G11C *11/40, 13/00*
U.S. Cl. 365—206 **11 Claims**



1. A memory circuit comprising a plurality of word line groups each including a plurality of word lines, a plurality of bit lines intersecting with said word lines, a plurality of memory cells arrayed at the intersections of said word lines and said bit lines, a group selection circuit provided for each of said word line groups, a set of connection circuits provided for each of said word line groups, each of said connection circuits being coupled between an output terminal of the associated group selection circuit and associated one of word lines in the associated word line group, means for selecting one of said connection circuits in each set, and a noise prevention circuit provided for each of said word line groups, said noise prevention circuit being coupled to the output terminal of the associated group selection circuit and maintain said output terminal at a reference potential when said associated group selection circuit is not enabled, each of said noise prevention circuits including a first field effect transistor coupled between a first node and a reference potential terminal and having a gate connected to a second node, a second field effect transistor coupled between said second node and said reference potential terminal and having a gate connected to said first node, a third field effect transistor coupled between said second node and a power voltage terminal, and means for connecting said first node to the output terminal of the associated group selection circuit.

4,610,003

DYNAMIC TYPE SEMICONDUCTOR MEMORY DEVICE

Kenji Natori, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

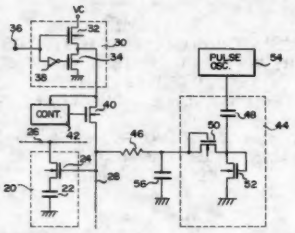
Filed Aug. 31, 1984, Ser. No. 646,107
Claims priority, application Japan, Sep. 2, 1983, 58-161464
Int. Cl.[4] G11C *7/00*; H03K *3/01*
U.S. Cl. 365—228 **17 Claims**

1. A dynamic type semiconductor memory device comprising:

at least one memory cell including capacitive means for storing an amount of charge corresponding to data and a MOS transistor for controlling charging and discharging to and from said capacitive means;

drive means for selectively generating turn on and first turnoff votages;

leak control means for generating a second turn off voltage, an absolute value of a difference between the second turn off voltage and the turn on voltage being larger than that



of a difference between the first turn off voltage and the turn on voltage; and

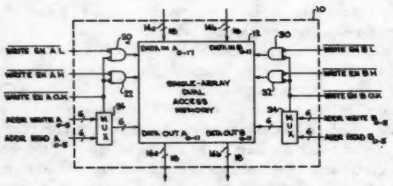
voltage supplying means including a large impedance element connected between said leak control means and the gate of said MOS transistor, a switching element connected between said drive means and the gate of said MOS transistor, and a switching controller which makes said switching element nonconductive in response to the first turn off voltage with a delay time and conductive in response to the turn on voltage.

4,610,004

EXPANDABLE FOUR-PORT REGISTER FILE

Ole H. Moller, and Paul Po Loi Chu, both of Sunnyvale, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 10, 1984, Ser. No. 659,390
Int. Cl.[4] G11C *8/00*
U.S. Cl. 365—230 **6 Claims**



1. A dual-access single-chip integrated circuit digital storage device having at least two input port means for receiving plural-bit data words and at least two output port means for generating plural-bit words, comprising:

random access memory (RAM) comprising a plurality of addressable plural-bit storage registers each connected to each said input port means by unidirectional busses;

on-chip addressing means responsive to a first and second storage register address signal and a first and second bi-state read/write signal for coupling said storage register having said first address to a first predetermined one of said input port means or to a first predetermined one of said output port means depending on the state of said first read/write signal and for coupling said storage register having said second address to a second predetermined one of said input port means or to second predetermined one of said output port means depending on the state of said second read/write signal; and

on-chip multiplex means connected to said addressing means and receiving at a first input a read address signal and at a second input a write address signal responsive to a bi-phase clock signal for selectively communicating to said addressing means said read address signal during the application of a predetermined one of said clock phase signal and said write address signal during the application of a predetermined second of said clock phase signal, and

whereby, the plural-bit contents of said RAM registers selected by said first and second address signals can be communicated to a predetermined one of said at least two input port means; and

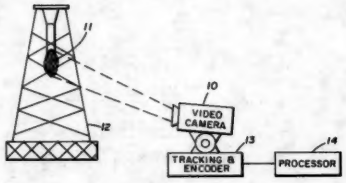
whereby, during the application of said predetermined one of said clock phase signal the contents of said storage register having said write address is replaced by the plural-bit data word received at a predetermined one of said input port means and during the application of said predetermined second of said clock phase signal the contents of said storage register having said read address is conducted to a predetermined one of said output port means.

4,610,005

VIDEO BOREHOLE DEPTH MEASURING SYSTEM

Joseph G. Utasi, Cincinnati, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jun. 19, 1980, Ser. No. 161,190
Int. Cl.[4] B21B *47/04*
U.S. Cl. 367—33 **5 Claims**



1. A method of determining penetration of a drill string into the earth utilizing an element of a drilling rig, comprising:

providing a target on the element of the drill rig;

positioning a video camera at a remote location relative to the drill rig

placing the video camera within a waterproof housing at said remote location;

directing the video camera at said target; and

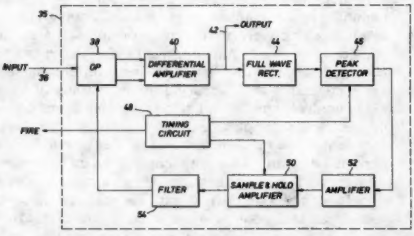
tracking the movement of said target with said drill string into the earth.

4,610,006

AUTOMATIC CONTROL SYSTEM FOR ACOUSTIC LOGGING

Clyde O. MacDonald, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Dec. 12, 1983, Ser. No. 560,294
Int. Cl.[4] H03G *3/30*; G01V *13/00*
U.S. Cl. 367—65 **3 Claims**



1. An automatic gain control system for use in an acoustic

well logging system having an acoustic transmitter for transmitting acoustic pulses in a well borehole and a plurality of longitudinally spaced apart acoustic receivers for receiving acoustic pulses traversing the well borehole and the earth formations between said transmitter and each of said receivers, said automatic gain control system comprising:

means for inputting signals from at least one of said acoustic receivers to a gain contolled operational amplifier, said operational amplifier having at least one input acoustic signal terminal and a feedback control signal input terminal;

differential amplifier means connected to the output of said gain controlled operational amplifier for amplifying the output of said operational amplifier and providing a system output acoustic signal and for providing a sample output signal to a feedback control signal generating loop circuit;

a timing circuit for providing reset signals a predetermined length of time following each successive acoustic pulse from said acoustic transmitter, the time interval between said acoustic pulses and said reset signals defining an operating cycle of the automatic gain control system;

full wave rectifying means responsive to the output of said differential amplifying means for generating a pulsating D.C. signal representative of said differential amplifier sample output signal;

peak detector means responsive to said pulsating D.C. signal and to said reset signal from said timing circuit for generating a peak output signal representative of the peak value of said pulsating D.C. signal in said operating cycle of the automatic gain control system;

sample and hold amplifier means having an input connected to the output of said peak detector means for holding and providing an output representative of said peak signal representative of the peak value of said pulsating D.C. signal; and

filter means having an input terminal connected to the output of said sample and hold amplifier to limit the high frequency content of said output signal, said filter having an output connected to said feedback control terminal of said gain controlled operational amplifier to thereby provide a gain control signal thereto.

4,610,007

METHOD AND APPARATUS FOR SURVEYING POSITIONS OF MOORING LINES

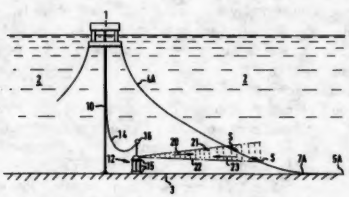
John L. K. Bannell, Great Sutton, and Donald M. Paul, Guildford, both of England, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 4, 1984, Ser. No. 568,161

Claims priority, application United Kingdom, Jan. 5, 1983, 8300176

Int. Cl.[4] G01S *15/42*

U.S. Cl. 367—104 **13 Claims**



1. A method of surveying the positions of mooring lines extending between a moored structure and anchoring means at the bottom of a body of water, said method comprising the steps of: positioning on the bottom of said body of water a transducer assembly including an acoustic pulse transmitting means and an acoustic receiving means at a predetermined submarine level above the water bottom; transmitting acoustic pulses from the transmitting means; receiving pulses at the receiving means that have been reflected from a mooring line; determining the position including the ocean-floor touch points of the mooring line on the basis of the time intervals between the transmitting of the pulses and the receiving of the reflected pulses; rotating the transducer assembly about a substantially vertical axis of rotation and repeating said transmitting, receiving and determining steps to determine the position of each of said mooring lines.

4,610,008

DISC PLAYING SYSTEM WITH CONTINUOUS PLAYING FUNCTION

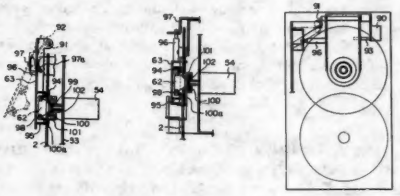
Masaya Ishibashi; Masaaki Kiyomiya, and Jun Kanda, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 10, 1984, Ser. No. 639,472

Claims priority, application Japan, Aug. 12, 1983, 58-147826

Int. Cl.[4] G11B *17/22*

U.S. Cl. 369—34 **1 Claim**



1. A disc playing system for automatically playing selected ones of a plurality of discs in succession, comprising:

a disc storing part having a plurality of disc storing slots for holding a predetermined direction; and

a transportation means movable in parallel to said direction of arrangement of the discs in the disc storing part, to a position of a disc storing slot in which a selected disc is stored, said transportation means including a slider member movable in a direction perpendicular to said direction of arrangement of the discs for transporting the selected disc from the disc storing slot to a playing position and vice versa, and

a guide roller assembly made up of a roller plate swingably connected to said slider member about a shaft arranged in parallel to said direction of movement of the slider member, and a guide roller rotatably supported at an end of said roller plate and being rotated when in contact with a periphery of the selected disc while said slider member is moved toward said playing position for transporting said selected disc to the playing position, wherein said disc storing part is provided with a plurality of guide members for guiding said transportation means into each of said disc storing slots, wherein said end of said roller plate is provided with a pair of contact projections respectively contactable at a point with said guide members when said end of said roller plate is introduced in one of said disc storing slots during movement of said slider member toward the playing position.

4,610,009

WRITING, ERASING AND READOUT SYSTEM FOR A MAGNETO-OPTIC RECORDING MEDIUM

G. A. Neville Connell, Cupertino, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed May 23, 1983, Ser. No. 497,325

Int. Cl.[4] G11B *13/04*

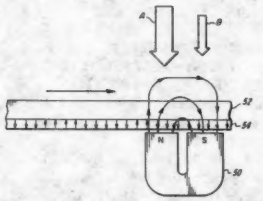
U.S. Cl. 369—110 **20 Claims**

1. A magneto-optic recording apparatus for providing information input to a magneto-optic recording medium having a number of tracks, characterized by including

plural laser means,

laser driver means capable of selectively and independently addressing each of said lasers,

optical system means interposed between said plural laser means and said magneto-optic recording medium for focusing said plural laser beams on at least one track of said medium, and



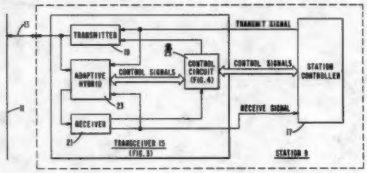
magnet means, located on the side of said medium opposite to said optical system means, including spaced pole pieces of opposite polarity positioned adjacent said medium with one of said laser means being associated with one of said pole pieces and another of said laser means being associated with the other of said pole pieces.

4,610,010

CONTROL CIRCUIT FOR AN ADAPTIVE HYBRID CONTROL IN A LOCAL AREA NETWORK

Albertus M. G. Claessen, Montfoort, and Hendrik van Bokhorst, Nijkerk, both of Netherlands, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 10, 1984, Ser. No. 680,104
Int. Cl.[4] H04L *5/14;* H04J *3/02;* H04B *3/20*
U.S. Cl. 370—32 **15 Claims**



1. In a local area network having a plurality of stations coupled to a transmission line over which signals are being simultaneously transmitted and received and wherein each station includes a station controller, a transmitter, a receiver and an adaptive hybrid circuit coupled to the transmission line and between the transmitter and the receiver for adaptively cancelling crosstalk from the transmitter to the receiver, a control circuit in each station for controlling the operation of the adaptive hybrid circuit in the station, said control circuit comprising:

means responsive to a request-to-send signal from the station controller for generating a first signal to enable a signal to be transmitted by the transmitter; and

means responsive to the first signal for enabling the adaptive hybrid circuit to adaptively cancel crosstalk from the transmitter to the receiver after a preselected period of time after the start of each transmission.

4,610,011

CONTROLLER FOR A MULTISTAGE SPACE SWITCHING NETWORK

Johannes Drayyer, Scottsdale, Ariz., assignor to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Nov. 5, 1984, Ser. No. 668,343
Int. Cl.[4] H04Q *11/04*
U.S. Cl. 370—58 **4 Claims**

1. In a switching network with a network clock which provides a network clock signal, a controller for a multistage space switching network comprising:

processor means including a microprocessor CPU;

a plurality of switching matrices, including a first switching matrix, at least one succeeding switching matrix and a last succeeding switching matrix;

each switching matrix including:

a plurality of switching paths;

a plurality of horizontal control signal leads, including a first, at least one succeeding and a last horizontal control signal lead; and

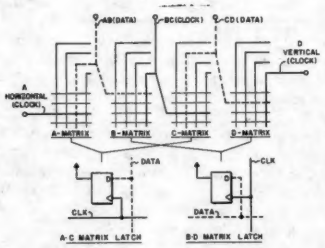
a plurality of vertical control signal leads, including a first, at least one succeeding and a last vertical control signal lead;

said controller for a multistage space switching network further comprising:

status means, including random access memory means, connected to said processor means and being operated to store a busy/idle indication for each switching path of each switching matrix;

control means, including a plurality of register means, connected to said processor means and being operated in response to said processor means to store indications for connecting an idle switching path through each of said plurality switching matrices;

Input/Output means connected between said processor



means and each of said register means, said Input/Output means being operated in response to said processor means to write said idle path indications into each said register means;

gating means connected to said control means, to said network clock and to said processor means, said gating means being operated in response to said network clock signal and to said processor means to produce a plurality control signals transmitted via a plurality of control leads;

said plurality of control leads including a first, at least one succeeding and a last control lead and corresponding control signals;

each said switching matrices connected to sad gating means via said plurality of control leads and being operated in response to said corresponding plurality of control signals to establish said idle switching path for signal transmission through said switching matrices;

said first control lead connected to one of said plurality of horizontal control signal leads of said first switching matrix;

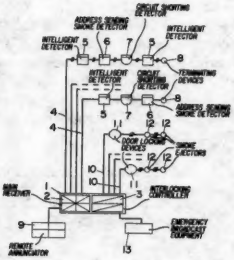
each succeeding control lead connected to one of said plurality of vertical control signal leads of a one preceding said succeeding switching matrix and connected to one of said plurality of horizontal control signal leads of said succeeding switching matrix; and

said last control lead connected to one of said plurality of vertical control signal leads of said last switching matrix.

4,610,012
SIGNAL TRANSMISSION SYSTEM FEATURING BIDIRECTIONAL TRANSMISSION OF DIFFERENT SIGNAL TYPES OVER A COMMON TRANSMISSION LINE CONNECTING A CENTRAL UNIT AND A PLURALITY OF TERMINAL UNITS

Motoharu Terada, Osaka, and Kazumasa Murakami, Aichi, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Apr. 23, 1984, Ser. No. 602,750
Claims priority, application Japan, Nov. 30, 1983, 58-226027
Int. Cl.[4] H04J *15/00*
U.S. Cl. 370—110.4 **12 Claims**



1. A signal transmission system comprising:

a central unit in combination with first and second terminal means connected thereto through a common signal transmission line comprising two wires;

said first terminal means transmitting to the central unit a first signal in the form of a level signal; and

said second terminal means transmitting and receiving a second signal in the form of a superposed signal upon the first signal to and from said central unit, said central unit including a time division multiplex device which determines:

a level signal transmission time band in which the central unit receives the level signal on the signal transmission line; and

a superposed signal transmission time band in which the central unit transmits and recieves the superposed signal on the signal transmission line, said superposed signal transmission time band alternating with said level signal transmission time band.

4,610,013
REMOTE MULTIPLEXER TERMINAL WITH REDUNDANT CENTRAL PROCESSOR UNITS

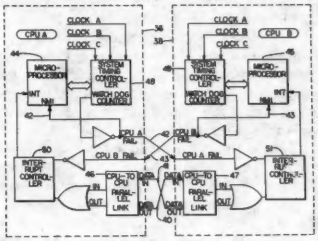
James R. Long, Huntsville, Ala., and Roy L. Harrill, Walton Beach, Fla., assignors to Avco Corporation, Huntsville, Ala.

Filed Nov. 8, 1983, Ser. No. 549,776
Int. Cl.[4] G06F *11/20*
U.S. Cl. 371—9 **6 Claims**

1. Apparatus for providing a remote multiplexer terminal with a failover capability from a first central processor unit to a second central processor unit without loss of data, said remote multiplexer terminal being a data acquisition and control system capable of receiving data at a clocked rate from a multiplicity of input/output devices and after processing that data according to a software program, delivering the results to an external equipment, the software program additionally serving to designate the first central processor unit as the "Master" and the second central processor unit as the "Slave", the apparatus being integral with the central processor units and comprising:

dual ported bus architecture circuits allowing the multiplicity of input/output devices to simultaneously present all input/output data to both central processor units thereby enabling both of said central processor units to receive and process the same data concurrently;

encircuiting means providing each of said central processor units with a watch dog timer for continuously monitoring the operational performance of its associated central processor unit, each watch dog timer including provision for repetitiously monitoring the ability of its associated central processor unit to properly decode a periodically sent predetermined message sequence, an improper result signifying a malfunction, said watch dog timer for the central processor unit functioning as "Master" further having the capability to transfer control of said remote multiplexer terminal to the "Slave" central processor unit when said "Master" malfunctions; and

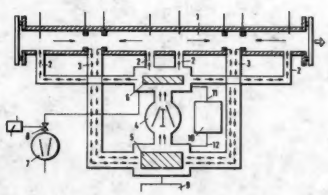


parallel linkage means between the dual central processor units serving to transfer control over all input/output functions without delay or loss of data when failover occurs on the malfunction of the first or "Master" central processor unit.

4,610,014
GAS FLOW LASER

Hinrich Martinen, Quickborn; Samuel S. Simonsson, and Peter Wirth, both of Winsen, all of Fed. Rep. of Germany, assignors to Rofin-Sinar Laser GmbH, Hamburg, Fed. Rep. of Germany

Filed Jan. 30, 1984, Ser. No. 575,226
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1983, 33051526
Int. Cl.[4] H01S *3/22*
U.S. Cl. 372—59 **2 Claims**



1. A method of conditioning the working gas within a laser resonating chamber of a gas laser by withdrawing working gas from the chamber, circulating said withdrawn working gas through a gas conditioning circuit and then returning said withdrawn working gas to the chamber, comprising the steps of providing a main, working gas, temperature conditioning, circuit with first and second separate conductor sections connected to the chamber for conducting all of said withdrawn working gas to and from the chamber respectively and a third conductor section connected between said first and second conductor sections in series therewith, producing a pressure differential between said first and second conductor sections by pumping all of said withdrawn working gas through said third conductor section and thereby circulating working gas

from the resonating chamber and sequentially through said second, third and first conductor sections of the main, temperature conditioning, circuit and back to the resonating chamber, conditioning in said main, temperature conditioning, circuit, the temperature of all of said withdrawn working gas as it is circulated from said resonating chamber through the main, temperature conditioning, circuit and back to the resonating chamber, providing an auxiliary working gas, composition conditioning, circuit having a fourth conductor section connected between said first and second conductor sections in parallel with said third conductor section and solely using said pressure differential to return to said second conductor section from said first conductor section and via said fourth conductor section, only a minor return portion of said withdrawn working gas pumped through said third conductor section from said second conductor section to said first conductor section and conditioning in said fourth conductor section, the composition of only said minor return portion of said withdrawn working gas as it returned through said fourth conductor section from said first conductor section to said second conductor section, said fourth conductor section being connected between said first and second conductor sections in parallel with said third conductor section so that all of said withdrawn working gas is conditioned by said temperature conditioning means and only said minor portion of said withdrawn working gas is conditioned by said composition conditioning means.

4,610,015

ELECTRODE ASSEMBLY FOR ARC FURNACES

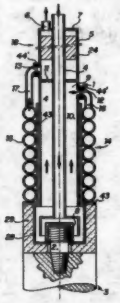
Derek Hill, Hatfield, United Kingdom; Inge Lauterbach-Dammler, Nuremberg, Fed. Rep. of Germany; Tom Taube, Erlangen, Fed. Rep. of Germany, and Dieter Zollner, Schwaig, Fed. Rep. of Germany, assignors to Arc Technologies Systems Ltd., Cayman Islands

Filed Aug. 10, 1984, Ser. No. 640,036

Claims priority, application Switzerland, Aug. 13, 1983, 4411/83

Int. Cl.[4] H05B *7/08, 7/12*

U.S. Cl. 373—93 **13 Claims**



1. In an electrode assembly for arc furnaces, having a metal shaft comprising a water cooling system and a clamping area, the metal shaft being surrounded by a protective jacket which is arranged below the clamping area, the assembly further including a consumable active portion, said metal shaft and said active portion being electrically interconnected by connecting means, the improvement comprising a refractory, electrically insulating ceramic layer susceptible to loss of insulation characteristic at elevated temperature, and having a main insulation section for said metal shaft plus a lower insulation component in contact with a lower graphite material or consumable active portion, a cooled protective jacket detachably arranged on said metal shaft and in resting engagement on said lower insulation component, said jeacket being thereby in cooling contact with both said insulating ceramic layer main section plus said lower insulation component, thereby electrically insulating said metal shaft and lower graphite material or consumable active portion from the protective jacket, the refractory layer being cooled by the cooling system of the protective jacket, whereby said main insulation section and lower component maintain insulation characteristic at elevated temperature.

4,610,016

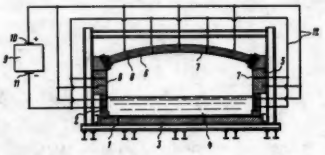
INDUSTRIAL FURNACE

Valentin M. Shostak; Alexei I. Tolochko; Vasily P. Volkov; Georgy I. Maradudin, all of Kharkov; Nikolai G. Schekin, Ljubotin Kharkovskoi; Mikhail I. Popov; Dmitry N. Shepelev, both of Bor; Anatoly I. Matveev; Alexandr I. Butnyakov, both of Bor, and Anatoly P. Rzhavichev, Bor, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky I Proektny Institut Po Ochistke Tekhnologicheskikh Gazov, Stochnykh Vod I Ispolzovaniju Vtorichnykh Energoresursov Predpriyaty Chernoi Metallurgii, Kharkov, U.S.S.R.

Filed Nov. 21, 1984, Ser. No. 673,611

Int. Cl.[4] F27D *1/00*

U.S. Cl. 373—137 **1 Claim**



1. An industrial furnace comprising:

a bath made of a refractory material for filling with a melt;

a direct current source;

main current-carrying elements having free ends extending to an operating area of said refractory material of the bath below and above the melt, and said main current-carrying elements extending to said operating area below the melt being connected with opposite terminals of said current source from said main current-carrying elements extending to said operating area above the melt; and

additional current-carrying elements having free ends sunk in said refractory material of the bath below and above the melt and said additional current-carrying elements being connected with the terminals of said power source of opposite polarity with respect to the connection of the main current-carrying elements of a corresponding part of said operating area.

4,610,017

HIGH FREQUENCY INDUCTION MELTING FURNACE AND PROCESS FOR THE PRODUCTION OF CERAMIC MATERIALS USING THIS FURNACE

Rene Perrier de la Bathie, St. Pierre d'Albigny, and Jacques Terrier, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Feb. 14, 1984, Ser. No. 580,133

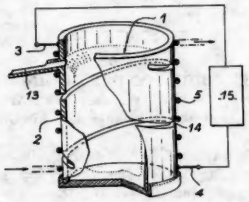
Claims priority, application France, Feb. 14, 1983, 83 02328

Int. Cl.[4] H05B *5/16*

U.S. Cl. 373—156 **3 Claims**

1. A high frequency induction melting furnace for maintaining material in a molten state by induction from an alternating current circuit, said furnace comprising: a crucible having a substantially cylindrical wall having inner and outer sides, said crucible comprising a conductive strip having an inner surface and an outer surface and extending lengthwise helically in a plurality of turns, with successive turns spaced from one another to define a cut that extends helically from one axial end of said wall to the other, said conductive strip thus constituting a single coil having a plurality of turns, said outer surface of said conductive strip defining a portion of said outer side of

said cylindrical wall; said crucible further comprising a portion of said material which is solidified and disposed in said cut and defining another portion of said outer side of said cylindrical wall; means connecting the opposite ends of said strip in an alternating current circuit wherein said coil comprised of said strip, in cooperation with molten material within said crucible,



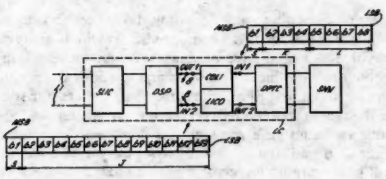
provides reactance that determines the frequency of alternating current in said circuit; and means on said outer side of said wall for conducting heat away from said outer side of said wall so that said material disposed in said cut remains solidified and prevents molten material from escaping from said crucible through said cut.

4,610,018

PULSE CODE MODULATION TRANSLATORS

Dirk H. L. C. Rabaey, Borgerhout, and Didier R. Haspeslagh, Harelbeke, both of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sep. 13, 1984, Ser. No. 650,336
Claims priority, application Belgium, Sep. 19, 1983, 2/60209
Int. Cl.[4] H03M *7/30*
U.S. Cl. 375—25 **4 Claims**



1. A Pulse Code Modulation (PCM) translator for translating a PCM input word into a PCM output word, one of said words being in accordance with a compressed code and the other word in accordance with a linear code, wherein the binary bits of the input word are converted into those of the output word in accordance with either the A-law or the mu-law as determined by the selectable binary value of a control bit (A) which determines the digital values of several coding parameters (a, b, c, K'; c, d, K') of the translator; including

means for translating a compressed PCM input word portion including a 3-bit segment code portion and a 4-bit step code into a linear PCM output word by determining the function

$$J=(L+a\cdot 2^4+b\cdot 2^{-1})\cdot 2^{K'}+c$$

wherein

J is said output word;

L is said step code;

a, b and c are variables;

K' is related to said segment code and is dependent, together with said variables a, b and c, on said control bit (A) indicating that said input word is coded according to the A-law or mu-law;

decoder means for decoding said 3-bit segment code into a 1-out-of-8 code S7, S6, . . . , S'1, S'0;

logic means coupled to said decoder means and controlled by said control bit (A) and providing the variables:

$$a=S'0+A$$

$$b=S'0(S'1+A)$$

$$SO=S'0\cdot A$$

$$S1=S'0\cdot A+S'1$$

the code word S7, . . . S1, S0 constituting an altered segment code having a decimal value K';

means (SIPO) for modifying said step code L by said variables a and b so as to obtain an altered step code

$$L+a\cdot 2^4+b\cdot 2^{-1}$$

multiplier means coupled to said modifier means for multiplying said altered step code with $2^{K'}$ so as to obtain the product

$$(L+a\cdot 2^4+b\cdot 2^{-1})\cdot 2^{K'}$$

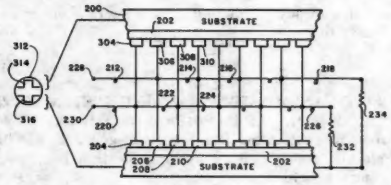
and adder means coupled with said mulitplier means and controlled by said control bit (A) to add said variable c to said product so as to obtain said output word J.

4,610,019

ENERGIZING ARRANGEMENT FOR CHARGE COUPLED DEVICE CONTROL ELECTRODES

Ernie Richards, Cincinnati, Ohio, and Nathan Bluzer, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 24, 1984, Ser. No. 664,197
Int. Cl.[4] G11C *27/04*; H01L *29/76*
U.S. Cl. 377—58 **4 Claims**



1. Integrated circuit charge coupled device structure comprising:

a plurality of charge coupled device cells disposed across the face of an integrated circuit chip, each cell including a gate electrode and an adjacent semiconductor depletion region potential well area, said cells being arranged in output to input ordered serial sequence capable of propagating received input signal transitions incrementally between cells, in shift register fashion, in respose to periodic clock signal transitions received at said gate electrode of each said cell;

a source of said periodic transition clock signals coupled to a signal node on said integrated circuit chip;

transmission means extending across the face of said integrated circuit chip and connecting with said signal node and said gate electrodes, said transmission means including a plurality of electrical inductance elements electrically located between successive gate elements in said cell serial sequence and comprising in combination with the electrical gate capacitance of said gate electrodes a signal transmission line having a characteristic impedance, Z;

first electrical resistance means of resistance Z located at one end of said transmission line for terminating said transmission line in its characteristic impedance; and

capacitance compensating elements located electrically between each of said transition means inductance elements for compensating the variations in capacitance occurring with signal level related variations of well charge at said gate electrode of said charge coupled device cells.

4,610,020

X-RAY MASK RING AND APPARATUS FOR MAKING SAME

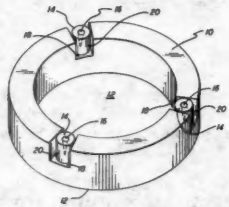
Carlo La Fiandra, New Canaan, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 6, 1984, Ser. No. 568,778

The portion of the term of this patent subsequent to Aug. 6, 2002, has been disclaimed.

Int. Cl.[4] G21K *5/00*

U.S. Cl. 378—35 **9 Claims**



1. A mask ring assembly for X-ray lithography comprising:

a mask ring;

a plurality of kinematic mounts for removably mounting said mask ring on an alignment cartridge;

each of said kinematic mounts including an insert member having a funnel-like shaped seat for receiving a mating ball-like shaped member mounted on said alignment cartridge; and

adhesive means for mounting said insert member on said mask ring.

4,610,021

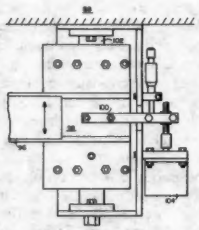
X-RAY TRANSMISSION SCANNING SYSTEM HAVING VARIABLE FAN BEAM GEOMETRY

Kristian R. Peschmann, San Francisco, and John H. Bower, Palo Alto, both of Calif., assignors to Imatron, Inc., South San Francisco, Calif.

Filed Jun. 13, 1984, Ser. No. 620,320

Int. Cl.[4] G21K *1/04*

U.S. Cl. 378—150 **4 Claims**



1. In an X-ray transmission scanning system in which X-rays are directed from an X-ray source to an arcuate array of detectors, X-ray collimation menas comprising a plurality of juxtaposed rings of X-ray impervious material for forming a plurality of fan beams, first support means for fixedly supporting at least one of said rings between said X-ray source and said array of detectors, and second support means for moveably supporting at least one other of said rings between said X-ray source and said array of detectors so that spacing between at least two rings can be varied for varying the thickness of a fan beam of radiation passing therethrough, said arcuate array of detectors being positioned in an annular housing, said annular housing forming one of said rings.

4,610,022

VOICE ENCODING AND DECODING DEVICE

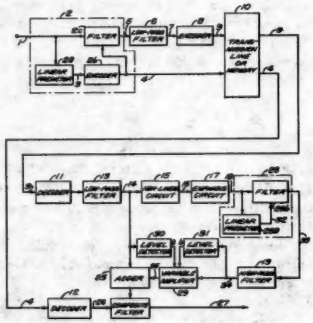
Seishi Kitayama; Fumihiro Yato, and Akira Kurematsu, all of Tokyo, Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1982, Ser. No. 449,760

Claims priority, application Japan, Dec. 15, 1981, 56-200852

Int. Cl.[4] G10L *5/00*

U.S. Cl. 381—36 **4 Claims**



1. A voice encoding and decoding device comprising a first predictor consisting of a linear predictor which analyzes an input voice to a predictive parameter, a first encoder which is connected to said linear predictor and encodes the predictive parameter and a first filter whose frequency characteristics are controlled by the encoded predictive parameter and which outputs a predictive error signal, a low-pass filter which is connected to said first filter and passes only a base band component of the predictive error signal, a second encoder which is connected to said low pass filter and encodes the base band component, transmission or memory means which is connected to said first and second encoders and transmits or stores the encoded base band component and the encoded predictive parameter, first and second decoders which are connected to said transmission or memory means, said first decoder decoding the encoded base band component, and said second decoder decoding the encoded predictive parameter, a nonlinear circuit which is connected to said first decoder via a low pass filter and produces a higher harmonic component of the base band component, an emphasis circuit which is connected to said nonlinear circuit and emphasizes the high frequency range of the higher harmonic component, a second predictor which is connected to said emphasis circuit and consists of a second linear predictor and a filter whose frequency characteristics are controlled by a predictive parameter of said second linear predictor, a high-pass filter which is connected to said second predictor and which produces a high frequency output signal component having a flat high frequency range spectrum, level detecting means which receives said high frequency component and said base band component and detects the level difference therebetween, a variable gain amplifier which is connected to said level detecting means and compensates to equalize the level of said base band component with that of said high frequency component, an adder circuit which receives the base

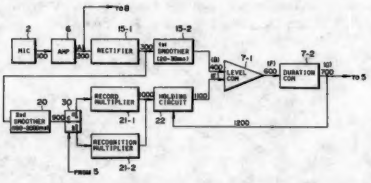
band component and the high frequency component of the same level and produces an exciting signal, and a voice composite filter which is connected to said adder circuit and said second decoder and composes said exciting signal and the decoded predictive parameter to reproduce a voice.

4,610,023

SPEECH RECOGNITION SYSTEM AND METHOD FOR VARIABLE NOISE ENVIRONMENT

Kazunori Noso, Yokosuka; Norimasa Kishi, Yokohama, and Toru Futami, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Jan. 6, 1983, Ser. No. 456,326
Claims priority, application Japan, Jun. 4, 1982, 57-94883
Int. Cl.⁴ G10L *5/00*
U.S. Cl. 381—43 **20 Claims**



1. A speech recognition system for activating an automotive vehicle actuator in response to a command spoken instruction signal coupled through and transduced by a microphone while the system is responsive to a recognition-mode command signal, the system responding to the instruction to determine the extent to which the instruction resembles a reference spoken instruction signal previously coupled to the system through the microphone while the system was responsive to a recording-mode command signal, which comprises:

(a) first means for smoothing the spoken instruction signal coupled through the microphone;

(b) second means for smoothing the spoken instruction signal coupled through the microphone, said second smoothing means having a time constant longer than that of said first smoothing means;

(c) means for switching a smoothed spoken instruction signal derived by said second smoothing means to first and second terminals while the system is respectively activated to the recording and recognition modes in response to the recognition-mode and recording-mode command signals;

(d) first means connected to said first terminal for multiplying the level of the spoken instruction signal smoothed by said second smoothing means while the system is in the recording mode and for deriving a recording-mode threshold level signal corresponding thereto;

(e) second means connected to said second terminal for multiplying the level of the spoken instruction signal smoothed by said second smoothing means while the system is in the recognition mode for deriving a recognition-mode threshold level signal corresponding thereto, the multiplication rate of said second multiplying means being higher than that of said first multiplying means;

(f) means for comparing the smoothed spoken instruction signal level derived by said first smoothing means with (i) the recording-mode threshold level signal derived from said first voltage level multiplying means while the system is in the recording mode and (ii) the recognition-mode threshold level signal derived from said second voltage level multiplying means while the system is in the recognition mode and for deriving (i) a spoken instruction start command signal when the smoothed spoken instruction signal level derived by said first smoothing means exceeds one of the recording-mode and recognition-mode threshold levels for more than a reference start time and (ii) a spoken instruction end command signal when the smoothed spoken instruction signal level derived by said first smoothing means drops below one of the recording-mode and recognition-mode threshold levels for more than a reference end time; and

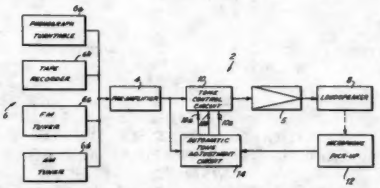
(g) a speech recognizer for starting recognition of the spoken instruction signal coupled through the microphone in response to the start command signal and stopping recognition of the same signal in response to the end command signal.

4,610,024

AUDIO APPARATUS

Michael P. Schulhof, New York, N.Y., assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 28, 1979, Ser. No. 107,784
Int. Cl.⁴ H04R *3/04*
U.S. Cl. 381—103 **18 Claims**



1. An audio apparatus comprising:

signal generating means for generating a first electrical audio frequency signal corresponding to audio information received from a source;

loudspeaker means for generating an acoustic signal in response to said first audio frequency signal;

pick-up means receiving said acoustic signal for generating a corresponding second electrical audio frequency signal;

automatic tone adjustment means for comparing said first and second audio frequency signals and producing a compared output signal; and

control means for adjusting a characteristic of said first audio frequency signal as applied to said loudspeaker means, in response to said compared output signal, whereby to ensure accurate acoustic signal generation by said loudspeaker means regardless of room and loudspeaker means design.

4,610,025

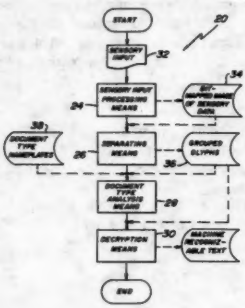
CRYPTOGRAPHIC ANALYSIS SYSTEM

Eric Blum, Wynnewood, and Wilbur Pierce, Bryn Mawr, both of Pa., assignors to Champollion Incorporated, Bala Cynwyd, Pa.

Filed Jun. 22, 1984, Ser. No. 623,739
Int. Cl.⁴ G01K *9/34*
U.S. Cl. 382—9 **49 Claims**

1. A system for recognizing the content of a communication in symbolic language having rules, said communication comprising a plurality of glyphs arranged in a predetermined order and defining plural glyph words, each of said glyphs being a discrete element generally comprising the smallest meaningful informational unit of said language, said system comprising sensory input means for sensing said plurality of glyphs and inputting a stream of data indicative thereof into storage menas, separating means for separating said data into a plurality of glyphs, compiling means for assigning a unique identifier to each set of substantially identical glyphs, pattern grouping means for arranging said identifiers in a grouped arrangement corresponding to the arrangement of said glyph words in said communication, decryption means including language and dictionary storage means for applying general cryptographic techniques to said identifiers to analyze said grouped identifiers

in terms of contextual patterns by their sequences within at least one word and their interrelationships as words, to thereby



determine the equivalent symbol of language corresponding to each of said identifiers.

4,610,026

METHOD OF AND APPARATUS FOR ENLARGING/REDUCING TWO-DIMENSIONAL IMAGES

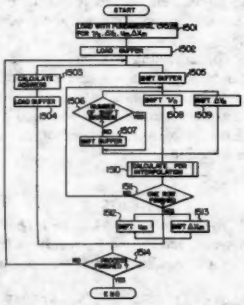
Kuniaki Tabata, Tokyo; Tetsuo Machida, Sagamihara; Haruo Takeda, Machida; Naoki Takada, Hadano, and Yasuyuki Okada, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 28, 1983, Ser. No. 489,350

Claims priority, application Japan, Apr. 30, 1982, 57-71237; Sep. 6, 1982, 57-153904

Int. Cl.[4] G06K *9/42*

U.S. Cl. 382—47 **20 Claims**



1. A method of converting a first two-dimensional image on first column direction and row direction scales to a second two-dimensional image on second column direction and row direction scales (a, b) each of said first and second two-dimensional images being of image elements arranged in matrix having various data values, the ratios between said first and second scales being predtermined column direction and row direction scale factors, respectively, comprising:

first step of finding out periodicity of sequences of differences between those column and row order numbers in the first image element matrix which are particularly related in the scale conversion to coordinates of second image elements and those column and row order numbers in the first image element matrix which are particularly related to coordinates of second image elements adjacent to the first-mentioned second image elements, and determining data sequences for the periods of said respective sequences of said differences, said determined data sequences being representative of positional relations between said first image elements and second image elements (Q) with respect to said periods, and said positional relations being defined by said column direction and row direction scale factors;

second step of storing in a memory at least one period of said determined sequences; and

third step of determining a position of each of said second image elements with respect to said particularly related column and row order numbers by referring to said data stored in said memory.

4,610,027

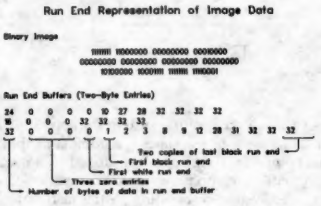
METHOD FOR CONVERTING A BIT MAP OF AN IMAGE TO A RUN LENGTH OR RUN END REPRESENTATION

Karen L. Anderson, Peekskill; Gerald Goertzel, White Plains, and Joan L. Mitchell, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1983, Ser. No. 567,218

Int. Cl.[4] G06K *9/36*

U.S. Cl. 382—56 **19 Claims**


Run End Representation of Image Data
Binary Image
Run End Buffers (Two-Byte Entries)
Two copies of last black run end
First black run end
First white run end
Three zero entries
Number of bytes of data in run end buffer

1. A method for converting an image stored as a bit map in binary form, with alternating bit strings of either of two types, to a run representation form, comprising the steps of:

(a) segmenting a first line of bit strings of said bit map into units of equal number of bits for use in indexing lookup tables;

(b) creating a first lookup table which contains, for each possible unit used as an index value, the number of leading bits in the unit which are of the first binary type;

(c) creating a second lookup table which contains, for each possible unit used an an index value, the number of leading bits in the unit which are of the second binary type;

(d) converting the first line of said image to run representation form by the steps of:

(1) converting the first bit string in said first line to a run representation by:

(i) determining the length of said first bit string by using the first and successive units as indices to said first lookup table to obtain the number of leading bits in each unit which belong to said first bit string until a unit is found wherein not all of the bits belong to said first string;

(ii) storing the run representation of said first string in a run representation buffer; and

(iii) modifying said unit wherein not all of the bits belong to said first string by discarding those leading bits in said unit that belong to said first bit string and shifting the remaining image bits to the leading bit positions in said modified unit while introducing non-image bits in the trailing positions;

(2) converting the second bit string in said line to a run representation by:

(i) determining the length of said second bit string by using said modified unit, ignoring said non-image bits, and successive units as indices to said second lookup table to obtain the number of leading bits in each unit which belong to said second bit string until a unit is found wherein not all of the bits belong to said second string;

(ii) storing the run representation of said second string in said run representation buffer; and

(iii) modifying said unit wherein not all of the bits belong to said second string by discarding those leading bits in said unit that belong to said second bit string and shifting the remaining image bits to the leading bit positions in said modified unit while introducing non-image bits in the trailing positions;

(3) repeating said steps of converting for successive bit strings until all of the bit strings in said first line have been stored in run representation form in said run representation buffer; and

(e) repeating the steps of segmenting and converting for successive lines to the end of the image.

4,610,028
BULK CONTAINERS

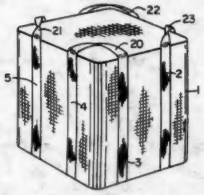
Frank Nattrass, Harrogate, England, assignor to Nattrass-Hickey and Sons Limited, West Yorkshire, England

Filed Jul. 25, 1985, Ser. No. 759,092

Claims priority, application United Kingdom, Aug. 14, 1984, 8420600

Int. Cl.[4] B65D *33/14, 88/16*

U.S. Cl. 383—7 **5 Claims**



1. A flexible bulk container comprising a side wall structure formed from a length of tubular woven fabric, the fabric comprising a base fabric and a plurality of parallel reinforcing bands woven integrally with the base fabric and extending parallel to the axis of the tube, a bottom stitched to the side wall structure at one end of the length of fabric, and a plurality of lifting loops at the other end of the length of fabric, each lifting loop being formed by cutting back a portion of base fabric alongside each of two adjacent reinforcing bands to leave parts of these bands projecting from the base fabric, and securing together the free ends of the two projecting parts.

4,610,029
BAG TO BE CARRIED IN THE HAND AND PROCEDURE FOR MANUFACTURING THE BAG

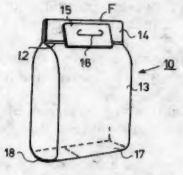
Esko Huhtala; Markku Laaksonen; Matti Vaho; Johannes Karttunen, all of Pori, Finland, and Gosta Eklund, Trinity, N.C., assignors to Oy W. Rosenlew AB, Finland

Continuation of Ser. No. 522,720, Aug. 12, 1983, abandoned. This application Aug. 8, 1985, Ser. No. 763,706

Claims priority, application Finland, Sep. 29, 1982, 823330

Int. Cl.[4] B65D *33/02, 33/08*

U.S. Cl. 383—10 **12 Claims**



1. In a hand carry bag constructed of a pair of adjacent plies of plastic material forming a two-ply main course, said bag including a top part, and a bottom part, and an intermediate jacket part, said top part having a carrying aperture formed therein, and wherein a seam joining said adjacent plies along narrow opposed regions thereof extends transversely across said bag to close said top part, the improvement comprising:

said top part includes a first portion of said two-ply main course situated above said seam and which has a first pair of mutually adjacent plies and at least one fold portion constituting a second portion of said two-ply main course situated above said seam and which has a second pair of mutually adjacent plies, said fold portion being folded from said two-ply main course to overlie said first portion of said two-ply main course;

a reinforcing patch having respective regions which at least partially overlie and are attached to said fold portion of said top part and said jacket part to join the same to each other, said reinforcing patch at the same time overlying and being attached to at least a part of said transverse seam to reinforce the same and improve its strength.

4,610,030
FREQUENCY MODULATED TRANSMITTER APPLICABLE TO MF BROADCASTING

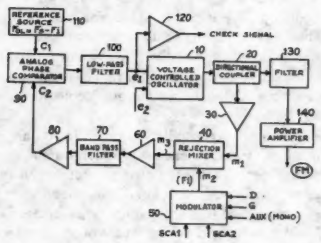
Mariano Dominguez, La Courneuve, and Daniel Artaud, Chatou, both of France, assignors to Thomson-LGT, Chatou, France

Filed Nov. 2, 1984, Ser. No. 667,922

Claims priority, application France, Nov. 4, 1983, 83 17590

Int. Cl.[4] H04B *1/04*

U.S. Cl. 455—113 **6 Claims**



1. Frequency modulation transmitter comprising:

an output oscillator centered on a central frequency F_S of a transmitting channel, the output oscillator having at least one modulation input and an output, a modulation signal being applied to the modulation input through an intermediary frequency of a phase-locking loop, the phase-locking loop including:

a mixer having a first input connected to the output of the oscillator and a second input connected to the output of a modulator, the modulator having a central intermediary frequency F_i, the frequency of the central intermediary frequency F_i being much smaller than the central frequency of the transmitting channel, the modulator further receiving an information modulation signal;

a band pass filter having an input connected to the output of the mixer, the band pass filter further having a band width equal to the band width of the output oscillator, the frequency of the band pass filter being shifted from the central intermediary frequency of the modulator;

an analog phase comparator having a first input connected to the output of the band pass filter and a second input coupled to a stable reference frequency source, the source having a frequency beat between the central transmitting frequency and the central intermediary frequency; and

a low pass filter having an input coupled to the output of

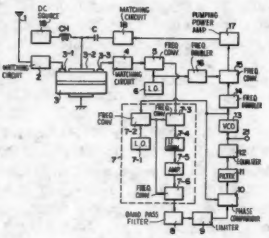
the comparator and an output connected to the modulation input of the oscillator.

4,610,031

RECEIVER INCLUDING SURFACE ACOUSTIC WAVE AMPLIFIER

Masaharu Mori, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1984, Ser. No. 623,808
Claims priority, application Japan, Jun. 23, 1983, 58-113324
Int. Cl.[4] H04B *1/26*; H03F *7/00*
U.S. Cl. 455—263 **7 Claims**



1. A receiver, comprising:

surface acoustic wave amplifier means provided in a high frequency amplification stage for generating an output signal corresponding to a surface acoustic wave propagating on said surface acoustic wave amplifier means;

phase locked loop demodulator means for demodulating said output signal from said surface acoustic wave amplifier means;

a voltage controlled oscillator controlled by an output signal from said phase locked loop demodulator means, said voltage controlled oscillator producing an output signal having frequency modulated components;

means responsive to said frequency modulated components of said output signal from said voltage controlled oscillator for producing a pumping signal which has frequency modulated components and is applied to a pumping input of said surface acoustic wave amplifier means; and

frequency converter means for producing an output signal which is said output signal from said surface acoustic wave amplifier means frequency converted by said output signal from said voltage controlled oscillator, said output signal of said frequency converter means being applied to an input of an equalizer circuit which has transfer characteristics opposite to those of said surface acoustic wave amplifier means both in amplitude and in phase, an output signal from said equalizer circuit being applied to an input to said phase locked loop demodulator means.

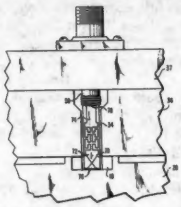
4,610,032

SIS MIXER HAVING THIN FILM WRAP AROUND EDGE CONTACT

Ronald E. Miller, Riegelsville, Pa., and Antony A. Stark, Holmdel, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 16, 1985, Ser. No. 691,943
Int. Cl.[4] H04B *1/16*; H01P *3/08*
U.S. Cl. 455—325 **7 Claims**

1. A substrate for use in a mixer, said substrate comprising an elongate conductive stripline circuit deposited thereon having first and second ends, said first and second ends having a thin metallic coating applied thereto using photolithographic techniques so as to extend the conductive path of said stripline circuit over the edges of said substrate.



4,610,033

INSULATOR WITH FIBER OPTIC COMMUNICATION CHANNEL

Frederick L. Fox, Jr., Wadsworth, Ohio, assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Dec. 14, 1984, Ser. No. 681,799
Int. Cl.[4] H04B *9/00*
U.S. Cl. 455—612 **4 Claims**

1. An insulator apparatus comprising

a central electrically nonconductive strength member;

attachment fitting at opposite ends of said strength member for attaching said member to devices which are to be physically separated from each other and which are at different electrical potentials;

first and second housings surrounding and fixedly attached to opposite ends of said strength member between said attachment fittings;

a plurality of sheds in end-to-end relationship along said strength member, each said shed surrounding said strength member;

means defining a groove extending along an outer surface of said strength member; and

at least one optical fiber extending along said strength member in said groove and within said sheds to provide a communication path from one end of the insulator to the other,

each of said housing including first and second axially spaced end members fixedly attached to said strength member,

a generally cylindrical sleeve surrounding said end members and the space therebetween, thereby forming a closed chamber, and

means in the axially outermost one of said end members for sealingly engaging an external optical fiber extending therethrough for introducing said external fiber into the interior of said chamber.

DESIGN PATENTS

GRANTED SEP. 2, 1986

ERRATA

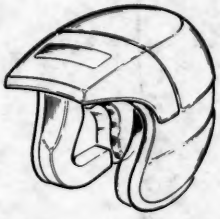
For CLASS	See PATENT NO.
D21–181	285,427

DESIGNS

SEPTEMBER 2, 1986

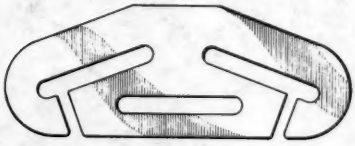
285,380
ICECREAM FIGURE
Klaus Gram, Vojens, Denmark, assignor to Brodrene Gram A/S, Vojens, Denmark
Filed Nov. 29, 1983, Ser. No. 556,044
Claims priority, application Denmark, Jun. 6, 1983, 540/83
Term of patent 14 years
U.S. Cl. D1—110

285,381
MOTORCYCLE HELMET
Chris R. Dawson, San Diego, and Gerald R. Parks, Chula Vista, both of Calif., assignors to John R. Gregory, Chula Vista, Calif.
Filed Jun. 18, 1984, Ser. No. 621,706
Term of patent 14 years
U.S. Cl. D2—232

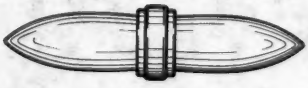


285,382
SANDAL
Michael M. Schornstein, and Alan M. Beychok, both of Memphis, Tenn., assignors to Scholl, Inc., Memphis, Tenn.
Filed May 7, 1984, Ser. No. 607,896
Term of patent 14 years
U.S. Cl. D2—283

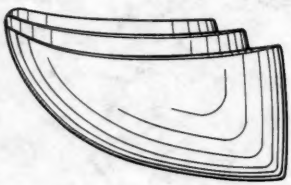
285,383
SEAT BELT T-BAR
James R. Anthony, Carmel, Ind., assignor to Indiana Mills & Manufacturing, Inc., Carmel, Ind.
Filed Aug. 23, 1985, Ser. No. 768,732
Term of patent 14 years
U.S. Cl. D2—405



285,384
BELT BUCKLE
Alexis V. Kirk, New York, N.Y., assignor to Somersett Moon Ltd., New York, N.Y.
Filed Nov. 27, 1984, Ser. No. 675,348
Term of patent 14 years
U.S. Cl. D2—422

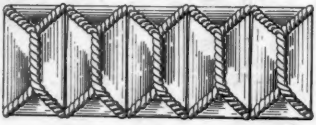


285,385
BELT BUCKLE
Alexis V. Kirk, New York, N.Y., assignor to Somersett Moon Ltd., New York, N.Y.
Filed Jan. 4, 1985, Ser. No. 688,892
Term of patent 14 years
U.S. Cl. D2—422

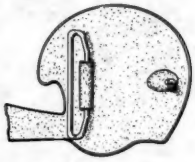


285,386
BELT BUCKLE
Alexis V. Kirk, New York, N.Y., assignor to Somersett Moon Ltd., New York, N.Y.
Filed Nov. 27, 1984, Ser. No. 675,349
Term of patent 14 years
U.S. Cl. D2—422

285,387
BELT BUCKLE
Alexis V. Kirk, New York, N.Y., assignor to Somersett Moon Ltd., New York, N.Y.
Filed Nov. 16, 1984, Ser. No. 672,280
Term of patent 14 years
U.S. Cl. D2—422



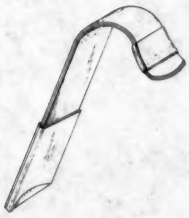
285,388
FOOTBALL HELMET BUCKLE
Gary L. Brunker, Cleburne, Tex., assignor to Sports Buckles, Inc., Cleburne, Tex.
Filed Apr. 26, 1984, Ser. No. 604,067
Term of patent 14 years
U.S. Cl. D2—431



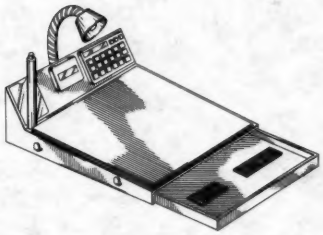
285,389
TOOTHBRUSH
Hank Ridless, 319 E. 24th St., New York, N.Y. 10010, and William Rayman, 60 E. 8th St., New York, N.Y. 10003
Filed Jul. 30, 1984, Ser. No. 635,910
Term of patent 14 years
U.S. Cl. D4—104

285,390
TOOTHBRUSH
William Rayman, 60 E. 8th St., New York, N.Y. 10003, and Hank Ridless, 319 E. 24th St., New York, N.Y. 10010
Filed Jul. 30, 1984, Ser. No. 636,120
Term of patent 14 years
U.S. Cl. D4—104

285,391
GARMENT HANGER CARRIER
Harry R. Mills, 103 Lilac Dr., Prattville, Ala. 36067
Filed Dec. 16, 1983, Ser. No. 562,298
Term of patent 14 years
U.S. Cl. D6—328

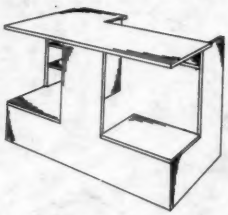


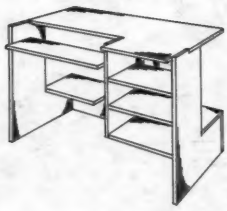
285,392
COMBINATION DESK UNIT
Harry Thompson, 4021 Greenwood Rd., Shreveport, La. 71109
Filed Jan. 17, 1984, Ser. No. 571,659
Term of patent 14 years
U.S. Cl. D6—399



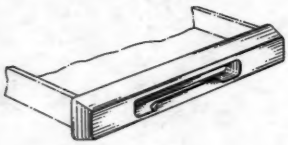
285,393
CLOTHES TREE OR SIMILAR ARTICLE
Philip V. D. Miller, 14 S. River St., Batavia, Ill. 60510
Filed May 11, 1984, Ser. No. 609,335
Term of patent 14 years
U.S. Cl. D6—412

285,394
DESK
Kevin Curran, Mount Royal, and Charles H. Brunet, Montreal, both of Canada, assignors to B.F.R. Home Care, Inc., Dorval, Canada
Filed Oct. 5, 1983, Ser. No. 539,259
Claims priority, application Canada, Apr. 5, 1983, 05-04-83-9
Term of patent 14 years
U.S. Cl. D6—426

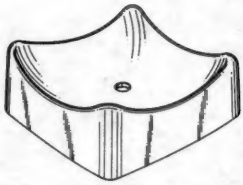




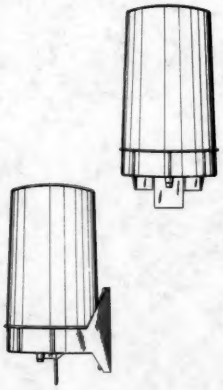
285,395
DRAWER FRONT OR SIMILAR ARTICLE
Robert Case, Chicago, Ill.; A. Ronald Holland, Center Point, Pa., and Joe H. Kennedy, Bay Minette, Ala., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.
Filed Jul. 18, 1983, Ser. No. 514,908
Term of patent 14 years
U.S. Cl. D6—494



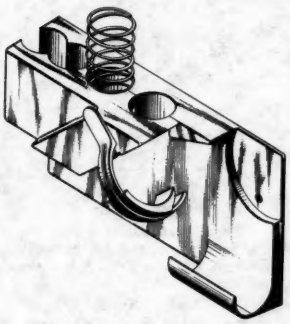
285,396
SOAP DISH
Masayoshi Odate, Tokyo, Japan, assignor to Sekisui Kagaku Kogayo Kabushiki Kaisha, Osaka, Japan
Filed Oct. 21, 1983, Ser. No. 544,152
Claims priority, application Japan, Apr. 25, 1983, 58-17714
Term of patent 14 years
U.S. Cl. D6—536



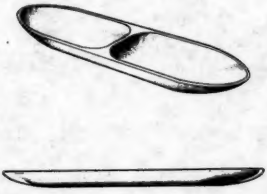
285,397
LIQUID SOAP DISPENSER
Carl-Arne Breger, Malmö, Sweden, assignor to Fiskeby Aktiebolag, Norrkoping, Sweden
Filed Feb. 6, 1984, Ser. No. 577,136
Claims priority, application Sweden, Aug. 19, 1983, 83-2123
Term of patent 14 years
U.S. Cl. D6—545



285,398
WALL MOUNTED RACK FOR HAIR GROOMING AIDS
Paul T. Winters, Arvada, Colo., assignor to Heu, Incorporated, Arvada, Colo.
Filed Jul. 7, 1983, Ser. No. 511,736
Term of patent 14 years
U.S. Cl. D6—567

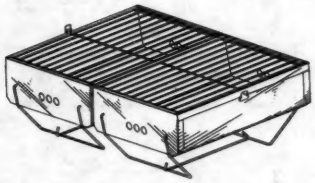


285,399
SPOON
Rolf M. Dilot, Lund, Sweden, assignor to Tetra Pak International AB, Lund, Sweden
Filed Apr. 3, 1984, Ser. No. 596,419
Claims priority, application Sweden, Oct. 10, 1983, 83-2605
Term of patent 14 years
U.S. Cl. D7—138

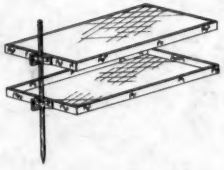


285,400
VACUUM JUG
Anso Zimmermann, Bad Hersfeld, Fed. Rep. of Germany, assignor to Rotpunkt Dr. Anso Zimmerman, Niederaula, Fed. Rep. of Germany
Filed May 9, 1983, Ser. No. 493,026
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1982, Mr 184
Term of patent 14 years
U.S. Cl. D7—317

285,401
BARBEQUE UNIT
Frederick J. Erickson, Des Moines, Iowa, assignor to Ehco, Inc., Marshalltown, Iowa
Filed Dec. 3, 1984, Ser. No. 677,508
Term of patent 14 years
U.S. Cl. D7—332

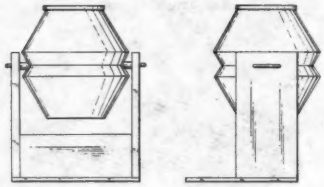


285,402
PORTABLE COOKING GRILL
Steve Hamill, Rte. 1, Box 579B, and Arthur A. Knight, 709 E. Mescalero Rd., both of Roswell, N. Mex. 88201
Filed Jul. 30, 1984, Ser. No. 635,805
Term of patent 14 years
U.S. Cl. D7—335



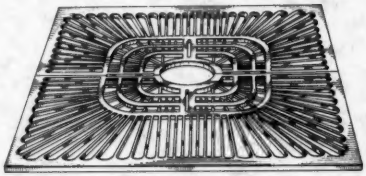
285,403
DOMESTIC EGG BOILER
Gary R. Wilson, 39, Longfield La., Cheshunt, Herts, England
Filed Nov. 30, 1983, Ser. No. 556,430
Claims priority, application United Kingdom, Jun. 17, 1983, 1013628
Term of patent 14 years
U.S. Cl. D7—354

285,404
FOOD MIXER
Mal-Fu Wang, 41-48 75th St., Apt. 2-R, Elmhurst, N.Y. 11373
Filed Jan. 16, 1984, Ser. No. 571,332
Term of patent 14 years
U.S. Cl. D7—377

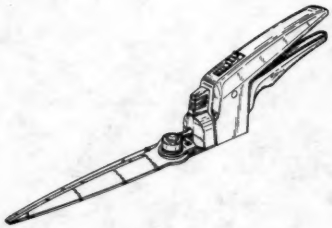


285,405
BOWL
Kenneth H. Grange, London, England, assignor to Thorn Emi Domestic Appliances Limited, London, England
Filed Dec. 15, 1983, Ser. No. 561,943
Claims priority, application United Kingdom, Aug. 20, 1983, 83-1014748
Term of patent 14 years
U.S. Cl. D7—412

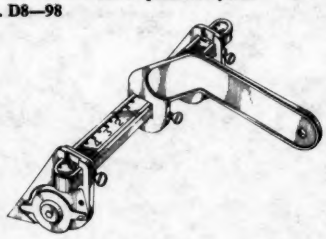
285,406
TREE DRAIN GRATE OR SIMILAR ARTICLE
Robert E. Haggard, Snohomish County, Wash., assignor to Merry Haggard, Snohomish, Wash.
Filed Jan. 30, 1984, Ser. No. 575,420
Term of patent 14 years
U.S. Cl. D8—1



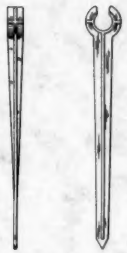
285,407
GRASS-SHEAR
Franco Clivio, Zürich, Switzerland, and Dieter Raffler, Neu-Ulm, Austria, assignors to Gardena Kress & Kastner GmbH, Fed. Rep. of Germany
Filed Mar. 2, 1984, Ser. No. 585,771
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1983, GRAIII1639/83
Term of patent 14 years
U.S. Cl. D8—5



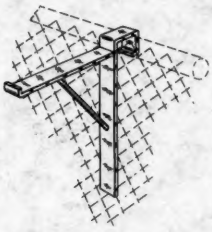
285,408
DUAL CUTTING DEVICE
Fred J. Salem, and Geraldine Salem, both of 907 Brandywine Cir., Atlanta, Ga. 30338
Filed Jun. 2, 1983, Ser. No. 500,453
Term of patent 14 years
U.S. Cl. D8—98



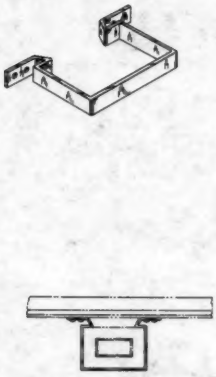
285,409
HOLDER FOR IRRIGATION TUBING
Jack L. Lemkin, Cincinnati, and Eugene A. Zilber, Columbus, both of Ohio, assignors to The O. M. Scott & Sons Company, Marysville, Ohio
Filed Nov. 2, 1983, Ser. No. 547,988
Term of patent 14 years
U.S. Cl. D8—356



285,410
FENCE BRACKET
Robert R. Webber, 7060 Dutch Rd., Saginaw, Mich. 48603
Filed Feb. 25, 1983, Ser. No. 469,749
Term of patent 14 years
U.S. Cl. D8—363

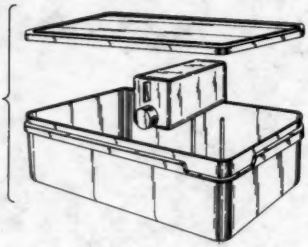


285,411
CHIMNEY BRACE
Nathaniel J. Mahoney, 666 Central St., Franklin, N.H. 03235
Filed Nov. 30, 1983, Ser. No. 556,385
Term of patent 14 years
U.S. Cl. D8—366

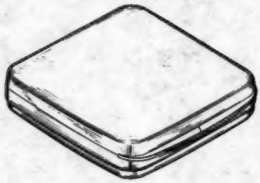


285,412
FLEXIBLE PACKAGE FOR GRANULIZED SOLIDS, LIQUIDS OR THE LIKE
George H. Harwell, Jr., The Colony, Tex., assignor to Con-Trac Packaging, Inc., Dallas, Tex.
Filed Feb. 13, 1984, Ser. No. 579,540
Term of patent 14 years
U.S. Cl. D9—345

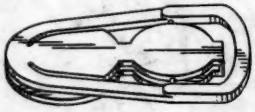
285,413
COMBINED FOOD CONTAINER AND BOTTLE
Arthur R. Carlson, East Malvern, Australia, assignor to The Decor Corporation Pty, Ltd., Scoresby, Australia
Filed Jul. 14, 1983, Ser. No. 513,719
Term of patent 14 years
U.S. Cl. D9—337



285,414
PACKAGING CONTAINER
Elmer Goetz, Philadelphia, Pa., and Kenard E. Urion, Woodbury, N.J., assignors to Scott Paper Company, Philadelphia, Pa.
Filed Jun. 6, 1984, Ser. No. 617,802
Term of patent 14 years
U.S. Cl. D9—420

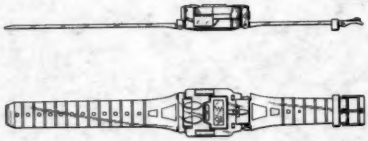


285,415
CLOSURE FOR CONTAINER OR THE LIKE
Thomas D. Brownbill, Sidmouth, England, assignor to Metal Box p.l.c., England
Filed Oct. 19, 1983, Ser. No. 543,517
Claims priority, application United Kingdom, Apr. 26, 1983, 1012713
Term of patent 14 years
U.S. Cl. D9—438

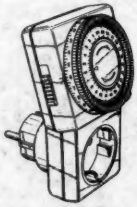


285,416
LID FOR A CONTAINER
William A. Dart, and Kenneth B. Dart, both of Okemos, Mich., assignors to Dart Container Corporation, Mason, Mich.
Filed Oct. 31, 1983, Ser. No. 547,020
The portion of the term of this patent subsequent to Aug. 7, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—447

285,417
COMBINED WRISTWATCH AND TOY AIRCRAFT
Shigeru Nakane, Narashino, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed May 9, 1984, Ser. No. 608,387
Term of patent 14 years
U.S. Cl. D10—33



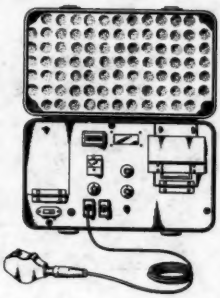
285,418
HOUSEHOLD TIMER
Klaus Keichel, Friedberg, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany
Filed Feb. 15, 1984, Ser. No. 581,332
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1983, MR VII21
Term of patent 14 years
U.S. Cl. D10—40

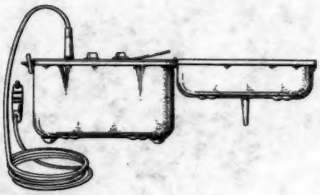


285,419
TIMER
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed May 14, 1984, Ser. No. 610,056
Term of patent 14 years
U.S. Cl. D10—40

285,420
TIMER WITH COMPARTMENT
Dan E. Gremonprez, West Bend, Wis., and William C. Cesaroni, Glenview, Ill., assignors to Dart Industries, Inc., Northbrook, Ill.
Filed Apr. 3, 1984, Ser. No. 595,032
Term of patent 14 years
U.S. Cl. D10—40

285,421
TIMER MECHANISM
Jack R. Meyer, Fairfax, Va., assignor to Electromagnetic Technology, Inc., Springfield, Va.
Filed Feb. 14, 1984, Ser. No. 580,168
Term of patent 14 years
U.S. Cl. D10—40



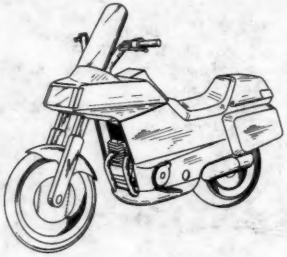


285,422
WATCH STRAP
Gary Grimes, Kessel-Lo, Belgium, assignor to Timex Corporation, Waterbury, Conn.
Filed Jul. 10, 1984, Ser. No. 629,524
Term of patent 14 years
U.S. Cl. D11—4

285,423
CLASS RING
Stuart A. Marcus, New London, Conn., assignor to Gold Lance Corporation, Houston, Tex.
Filed Jun. 18, 1984, Ser. No. 621,642
Term of patent 14 years
U.S. Cl. D11—28

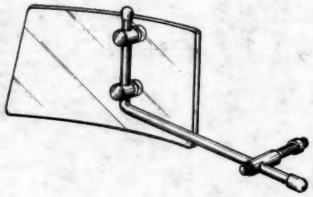
285,424
FOUR WHEELED MOTORCYCLE
Takashi Hishinuma, Hamamatsu, Japan, assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan
Filed Apr. 20, 1984, Ser. No. 602,455
Claims priority, application Japan, Mar. 9, 1984, 59/9388
Term of patent 14 years
U.S. Cl. D12—107

285,425
MOTORCYCLE
Koji Nakano, San Pedro, and Masakazu Matsuzawa, Rancho Palos Verdes, both of Calif., assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 26, 1984, Ser. No. 624,709
Term of patent 14 years
U.S. Cl. D12—110



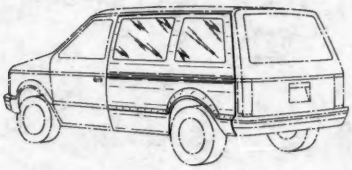
285,426
REAR PANNIER RACK FOR BICYCLES
James R. Blackburn, Los Gatos, and James J. Gentes, San Jose, both of Calif., assignors to Jim Blackburn Designs, Inc., Campbell, Calif.
Filed May 24, 1984, Ser. No. 613,562
Term of patent 14 years
U.S. Cl. D12—158

285,427
WIND SHIELD ATTACHMENT FOR A MOTORCYCLE HANDLEBAR
Jack B. Cline, 12827 Bromwich St., Arleta, Calif. 91331
Filed Nov. 7, 1983, Ser. No. 549,175
Term of patent 14 years
U.S. Cl. D12—181



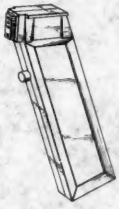
285,428
WINDSHIELD ATTACHMENT FOR A MOTORCYCLE
Jack B. Cline, 12827 Bromwich St., Arleta, Calif. 91331
Filed Nov. 7, 1983, Ser. No. 549,174
Term of patent 14 years
U.S. Cl. D12—182

285,429
AUTOMOBILE BODY SIDE PANEL EXTERIOR SURFACE
William A. Dayton, Northville; John E. Crain, Birmingham, and Robert N. Hubbach, Clarkston, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Division of Ser. No. 06/562,809, Dec. 19, 1983. This application Aug. 27, 1984, Ser. No. 644,747
Term of patent 14 years
U.S. Cl. D12—196

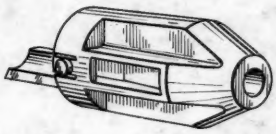


285,430
AUTOMOBILE SLIDING SIDE DOOR PANEL EXTERIOR SURFACE
William A. Dayton, Northville; John E. Crain, Birmingham, and Robert N. Hubbach, Clarkston, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Division of Ser. No. 06/562,809, Dec. 19, 1983. This application Aug. 27, 1984, Ser. No. 644,750
Term of patent 14 years
U.S. Cl. D12—196

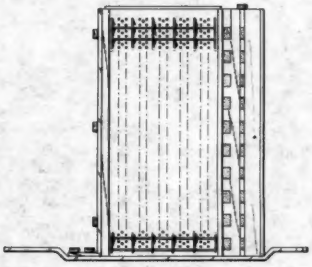
285,431
UNIT FOR RESETTING OR PRESETTING A REMOTE METER DISPLAY
Irwin A. Hicks, Radnor, Pa., assignor to American Meter Company, Philadelphia, Pa.
Filed Jun. 15, 1984, Ser. No. 620,990
Term of patent 14 years
U.S. Cl. D13—12



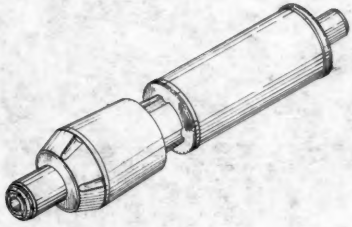
285,432
CIGARETTE LIGHTER PLUG BODY
Kenneth L. Rubel, 2141 N. Lakewood Ave., #1NF, Chicago, Ill. 60614
Filed Dec. 12, 1983, Ser. No. 560,452
Term of patent 14 years
U.S. Cl. D13—24



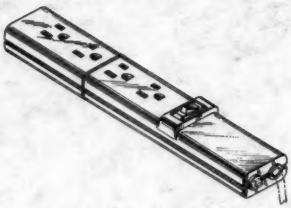
285,433
TELEPHONE CONNECTOR BLOCK OR SIMILAR ARTICLE
Paul V. De Luca, Plandome Manor; Michael Fasano, Syosset, and Albert Atun, Valley Stream, all of N.Y., assignors to Porta Systems Corp., Syosset, N.Y.
Filed Jan. 27, 1983, Ser. No. 436,635
Term of patent 14 years
U.S. Cl. D13—24



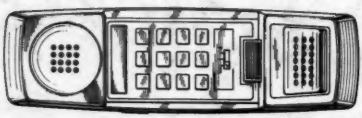
285,434
HIGH-VOLTAGE CIRCUIT INTERRUPTER
William R. Panas, Glenview, Ill., assignor to S&C Electric Company, Del.
Filed Feb. 11, 1983, Ser. No. 465,714
Term of patent 14 years
U.S. Cl. D13—24



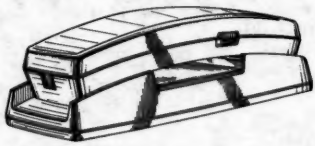
285,435
MULTIPLE OUTLET STRIP
George Hoehne, Glen Cove, N.Y., assignor to Slater Electric Inc., Glen Cove, N.Y.
Filed Nov. 19, 1984, Ser. No. 672,671
Term of patent 14 years
U.S. Cl. D13—30

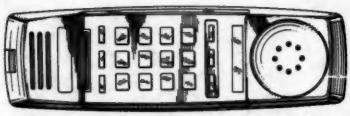


285,436
COMBINED HANDSET TELEPHONE AND CRADLE SET
Paul J. Klucznik, Fayetteville, N.Y., and Edward P. Redding, Jr., Eastchester, N.Y., assignors to General Electric Company, Portsmouth, Va.
Filed Mar. 15, 1984, Ser. No. 589,945
Term of patent 14 years
U.S. Cl. D14—53



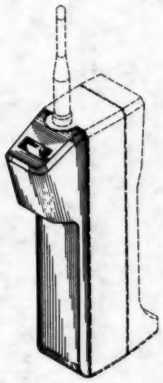
285,437
COMBINED HANDSET TELEPHONE AND CRADLE SET
George M. Buckler, Fayetteville, N.Y., assignor to General Electric Company, Portsmouth, Va.
Filed Mar. 15, 1984, Ser. No. 590,425
Term of patent 14 years
U.S. Cl. D14—53



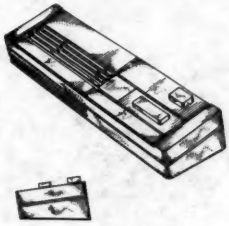


285,438
TELEPHONE
Tung S. Chen, No. 280 Sec. 5 Nan-King E. Rd., Taipei, Taiwan
Filed Sep. 4, 1984, Ser. No. 647,368
Term of patent 14 years
U.S. Cl. D14—53

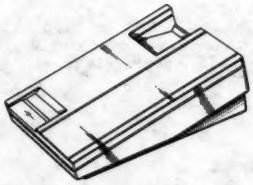
285,439
POWER SOURCE CONVERTER AND HANDSET ATTACHMENT FOR VEHICULAR RADIO TELEPHONE, OR SIMILAR ARTICLE
Albert L. Nagele, Wilmette, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 19, 1984, Ser. No. 622,328
Term of patent 14 years
U.S. Cl. D14—59



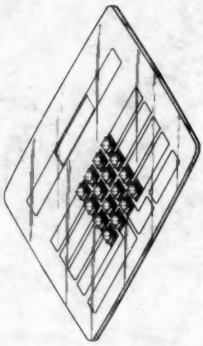
285,440
TELEPHONE SET ADD-ON ACCESSORY STAND
Robert B. Isaacs, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Mar. 16, 1984, Ser. No. 590,146
Term of patent 14 years
U.S. Cl. D14—59



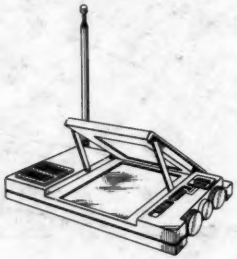
285,441
TELEPHONE SET BASE
Robert B. Isaacs, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Mar. 5, 1984, Ser. No. 586,445
Term of patent 14 years
U.S. Cl. D14—60



285,442
KEY-BOARD FACE FOR AN AUTOMATIC DIALING TELEPHONE SET
James F. McGuire, Danbury, Conn., assignor to Burroughs Corporation, Detroit, Mich.
Filed Nov. 14, 1983, Ser. No. 551,403
Term of patent 14 years
U.S. Cl. D14—66

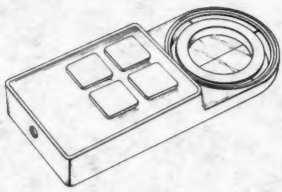


285,443
PORTABLE TELEVISION SET
Yutaka Ohtsu, Yokosuka, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Jan. 30, 1984, Ser. No. 575,318
Claims priority, application Japan, Dec. 20, 1983, 58-54893
Term of patent 14 years
U.S. Cl. D14—77

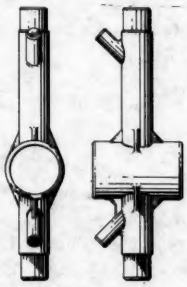


285,444
ANTENNA
Donald R. Newcomb, 405 E. Market St., Lockhart, Tex. 78644
Filed Mar. 21, 1984, Ser. No. 591,967
Term of patent 14 years
U.S. Cl. D14—86

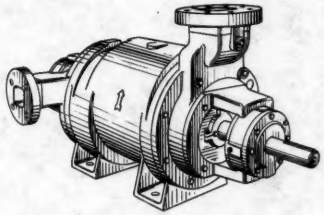
285,445
CURSOR FOR A GRAPHICS TABLET
Arnold M. Davis, Bloomington, and Samuel A. Lucente, Glenford, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 19, 1983, Ser. No. 562,022
Term of patent 14 years
U.S. Cl. D14—114



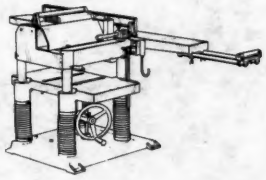
285,446
WIND GENERATOR HOUSING
Robert Lachapelle, P.O. Box 259, Key Largo, Fla. 33172
Filed Apr. 19, 1984, Ser. No. 601,925
Term of patent 14 years
U.S. Cl. D15—1



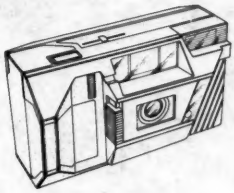
285,447
TWO-STAGE PUMP
Carl G. Dudeck, Newtown, and Richard A. Lametto, West Redding, both of Conn., assignors to The Nash Engineering Company, Norwalk, Conn.
Filed Dec. 5, 1983, Ser. No. 557,943
Term of patent 14 years
U.S. Cl. D15—7



285,448
ELECTRIC PLANER
Toshimitsu Hashii, Hiroshima, Japan, assignor to Ryobi Ltd., Hiroshima, Japan
Filed Mar. 19, 1984, Ser. No. 591,086
Claims priority, application Japan, Oct. 14, 1983, 58-44737
Term of patent 14 years
U.S. Cl. D15—127

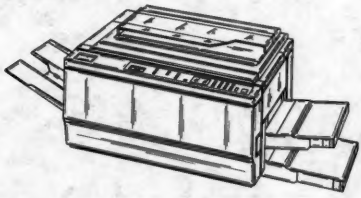


285,449
CAMERA
Koichi Soda, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Mar. 27, 1984, Ser. No. 593,727
Claims priority, application Japan, Sep. 27, 1983, 53-041928
Term of patent 14 years
U.S. Cl. D16—6



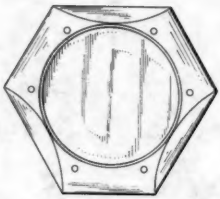
285,450
CAMERA
Koichi Soda, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Apr. 24, 1984, Ser. No. 603,366
Claims priority, application Japan, Oct. 24, 1983, 58-046159
Term of patent 14 years
U.S. Cl. D16—6

285,451
ELECTRONIC COPYING MACHINE
Mikio Kosako, and Hiroshi Nishibori, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jan. 13, 1984, Ser. No. 570,534
Claims priority, application Japan, Jul. 18, 1983, 58-31646
Term of patent 14 years
U.S. Cl. D16—31

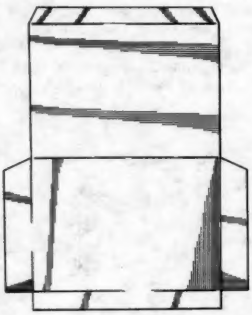


285,452
HOUSING FOR A HINGE FOR SPECTACLE FRAME
Vittorio Tabacchi, VII Strada, 20, Padova, Z.I., Italy
Filed Jan. 31, 1983, Ser. No. 462,663
Term of patent 14 years
U.S. Cl. D16—128

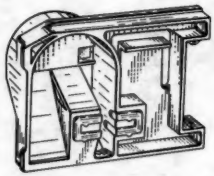
285,453
ELECTRONIC DRUM
Yoshiki Hoshino, Aichi, Japan, assignor to Hoshino Gakki Co., Ltd., Japan
Filed Oct. 2, 1984, Ser. No. 656,962
Claims priority, application Japan, Apr. 2, 1984, 59-013059
Term of patent 14 years
U.S. Cl. D17—22



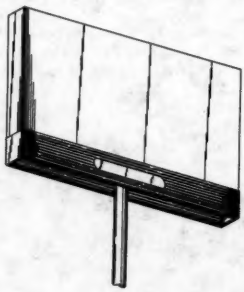
285,454
ENVELOPE BLANK
Fredrick G. Paulk, 7822 Newman #D, Huntington Beach, Calif. 92647
Filed Jan. 23, 1984, Ser. No. 572,871
Term of patent 14 years
U.S. Cl. D19—3



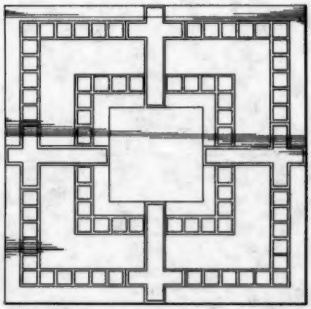
285,455
PAYOUT COMPONENT FOR A COIN DISPENSER
Timothy W. Tod, Abergavenny; Roger J. Tod, Crickhowell, both of Wales, and Robert D. Bellis, Delph, Nr. Oldham, England, assignors to Coin Controls Ltd., Royton, England
Filed Aug. 19, 1983, Ser. No. 524,738
Claims priority, application United Kingdom, Jun. 15, 1983, 1013569
Term of patent 14 years
U.S. Cl. D20—9



285,456
OUTDOOR ADVERTISING SIGN
Peter Wiens, 2225 Pine Street, Prince George, British Columbia, Canada
Filed Feb. 15, 1984, Ser. No. 580,215
Term of patent 14 years
U.S. Cl. D20—39

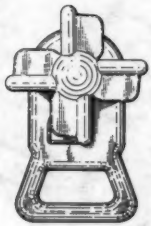


285,457
GAME BOARD
James E. Barineau, 707 Ty Ty Rd., Tallahassee, Fla. 32308
Filed Jun. 22, 1984, Ser. No. 623,127
Term of patent 14 years
U.S. Cl. D21—34



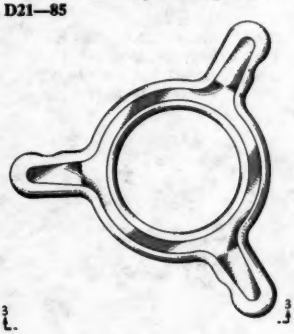
285,458
TOY RATTLE
Shinroku Nakao, Kanagawa; Yoshiyasu Ishii, Tokyo; Hiroaki Matsuda, Tokyo, and Tomiko Sato, Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Sep. 20, 1984, Ser. No. 652,392
Claims priority, application Japan, May 23, 1984, 59-20934
Term of patent 14 years
U.S. Cl. D21—59

285,459
SPINNING TOY RATTLE
Harry S. Thomson, Richmond; David M. Raffo, and John A. Pape, both of Hitchin, all of England, assignors to Hestair Kiddicraft Limited, Surrey, England
Filed Dec. 26, 1984, Ser. No. 686,293
Term of patent 14 years
U.S. Cl. D21—65

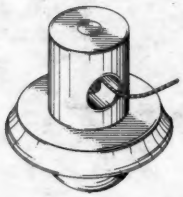


285,460
RETURN TOP RATTLE
Lawrence B. Grubb, Monkton, Md.; David M. Williams, New York, N.Y., and Danny E. Simpson, Baltimore, Md., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.
Filed Aug. 23, 1984, Ser. No. 643,518
Term of patent 14 years
U.S. Cl. D21—65

285,461
BOOMERANG
Alan J. Adler, 752 La Para Ave., Palo Alto, Calif. 94306
Filed Dec. 21, 1983, Ser. No. 564,472
Term of patent 14 years
U.S. Cl. D21—85

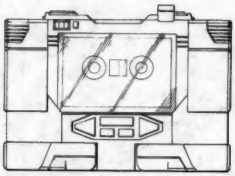


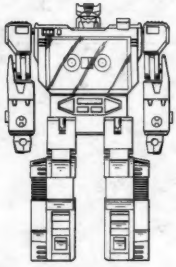
285,462
SPINNING TOP
Arnold C. Fiihr, 1537 W. Delano Dr., Tucson, Ariz. 85705
Filed May 28, 1985, Ser. No. 738,699
Term of patent 14 years
U.S. Cl. D21—96



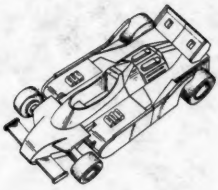
285,463
TOY CONSTRUCTION PIECE
David R. Davis, 214 Birch, Tooele, Utah 84074
Filed Nov. 29, 1984, Ser. No. 676,390
Term of patent 14 years
U.S. Cl. D21—108

285,464
RECONFIGURABLE TOY CASSETTE
Satoshi Koizumi, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Apr. 4, 1984, Ser. No. 596,632
Term of patent 14 years
U.S. Cl. D21—111

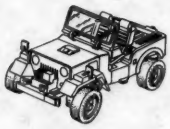


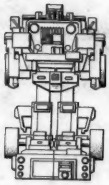


285,465
RECONFIGURABLE TOY VEHICLE
Kouzin Ohno, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Apr. 4, 1984, Ser. No. 596,624
Term of patent 14 years
U.S. Cl. D21—136



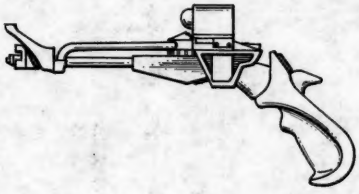
285,466
RECONFIGURABLE TOY VEHICLE
Kouzin Ohno, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Apr. 17, 1984, Ser. No. 601,308
Term of patent 14 years
U.S. Cl. D21—136





285,467
TOY WEAPON
William George, 100 South St., Apt. No. 116, Sausalito, Calif. 94965, and Phillip Norwood, 9 Driftwood, Novato, Calif. 94947
Filed Nov. 29, 1984, Ser. No. 676,457
Term of patent 14 years
U.S. Cl. D21—147

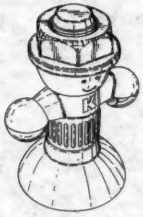
285,468
TOY WEAPON
Phillip Norwood, 9 Driftwood, Novato, Calif. 94947
Filed Nov. 29, 1984, Ser. No. 676,458
Term of patent 14 years
U.S. Cl. D21—147



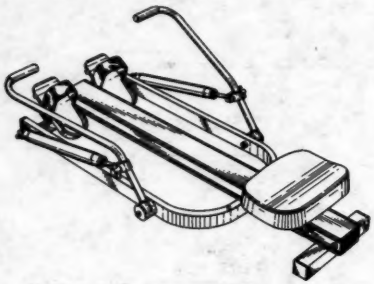
285,469
TOY WEAPON
Phillip Norwood, 9 Driftwood, Novato, Calif. 94947
Filed Nov. 29, 1984, Ser. No. 676,459
Term of patent 14 years
U.S. Cl. D21—147

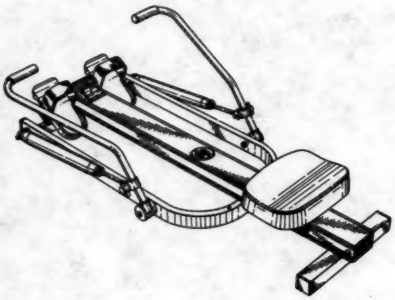
285,470
PULL TOY
Harry S. Thomson, Richmond; David M. Raffo, and John A. Pape, both of Hitchin, all of England, assignors to Hestair Kiddicraft Limited, Surrey, England
Filed Feb. 1, 1984, Ser. No. 575,832
Claims priority, application United Kingdom, Nov. 9, 1983, 1016181
Term of patent 14 years
U.S. Cl. D21—149

285,471
CHILD'S FIGURE TOY
Harry S. Thomson, Richmond; David M. Raffo, and John A. Pape, both of Hitchin, all of England, assignors to Hestair Kiddicraft Limited, Surrey, England
Filed Feb. 1, 1984, Ser. No. 575,833
Claims priority, application United Kingdom, Nov. 9, 1983, 1016180
Term of patent 14 years
U.S. Cl. D21—149



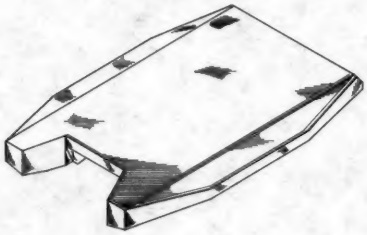
285,472
ROWING MACHINE
Dan E. Gremonprez, West Bend, Wis., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Feb. 1, 1985, Ser. No. 697,192
Term of patent 14 years
U.S. Cl. D21—195





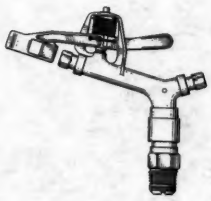
285,473
GOLF CLUB HEAD
James J. Flood, La Jolla, Calif., assignor to Orizaba Golf Products, Inc., San Diego, Calif.
Filed Mar. 15, 1984, Ser. No. 590,427
Term of patent 14 years
U.S. Cl. D21—214

285,474
SKIN/SCUBA DIVER UTILITY BOARD
Richard P. Tosch, Cape Cod Hill Rd., New Sharon, Me. 04955
Filed Dec. 8, 1983, Ser. No. 559,351
Term of patent 14 years
U.S. Cl. D21—228



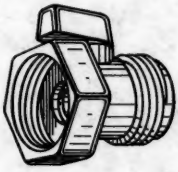
285,475
PRESSURE VESSEL OR SIMILAR ARTICLE
Gerald W. Born, Eldora, Iowa, assignor to Quality Products, Inc., Eldora, Iowa
Filed Feb. 14, 1984, Ser. No. 579,999
Term of patent 14 years
U.S. Cl. D23—2

285,476
IMPACT DRIVE SPRINKLER
Hans D. Christen, LaVerne, Calif., assignor to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.
Filed May 2, 1984, Ser. No. 606,174
Term of patent 14 years
U.S. Cl. D23—7

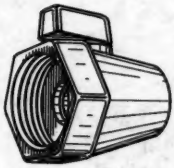


285,477
COMBINED TRIGGER SPRAYER AND CONTAINER
Robert W. Hengesbach, 7886 Mentor Rd., Mentor, Ohio 44060
Continuation-in-part of Ser. No. 461,874, Jan. 28, 1983. This application Apr. 30, 1984, Ser. No. 605,649
Term of patent 14 years
U.S. Cl. D23—18

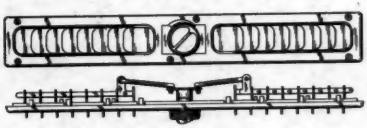
285,478
FLOW CONTROL VALVE
Robert W. Hengesbach, 7886 Mentor Rd., Mentor, Ohio 44060
Filed Jan. 28, 1983, Ser. No. 461,872
Term of patent 14 years
U.S. Cl. D23—19



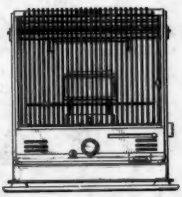
285,479
COMBINED FLOW CONTROL VALVE AND NOZZLE
Robert W. Hengesbach, 7886 Mentor Rd., Mentor, Ohio 44060
Filed Jan. 28, 1983, Ser. No. 461,873
Term of patent 14 years
U.S. Cl. D23—20



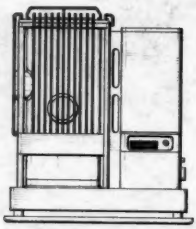
285,480
FIXTURE FOR HEATING AND VENTILATING DEVICES
Joachim Schulz, Mudau, Fed. Rep. of Germany, assignor to Aurora Konrad G. Schulz GmbH & Co., Mudau, Fed. Rep. of Germany
Filed Dec. 8, 1983, Ser. No. 559,311
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1983, MR II 375
Term of patent 14 years
U.S. Cl. D23—115



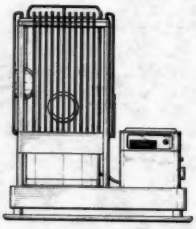
285,481
OIL-FIRED SPACE HEATER
Kazuharu Nakamura, Nagoya, Japan, assignor to Toyotomi Kogyo Co., Ltd., Aichi, Japan
Filed Oct. 1, 1984, Ser. No. 656,304
Claims priority, application Japan, Mar. 29, 1984, 59-12320
The portion of the term of this patent subsequent to Sep. 2, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—124



285,482
OIL-FIRED SPACE HEATER
Kazuharu Nakamura, Nagoya, Japan, assignor to Toyotomi Kogyo Co., Ltd., Aichi, Japan
Filed Oct. 1, 1984, Ser. No. 656,306
Claims priority, application Japan, Mar. 29, 1984, 59-12318
The portion of the term of this patent subsequent to Sep. 2, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—124

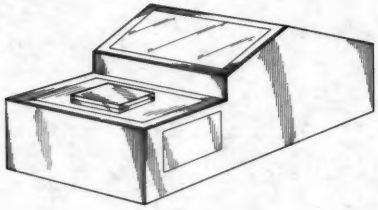


285,483
OIL-FIRED SPACE HEATER
Kazuharu Nakamura, Nagoya, Japan, assignor to Toyotomi Kogyo Co., Ltd., Aichi, Japan
Filed Oct. 1, 1984, Ser. No. 656,307
Claims priority, application Japan, Mar. 29, 1984, 59-12317
The portion of the term of this patent subsequent to Sep. 2, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—124

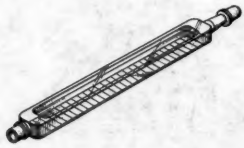


285,484
MEDICAL ULTRASOUND SCANNER
Leroy J. LaCelle, and Joseph L. Ungar, both of Redmond, Wash., assignors to Advanced Technology Laboratories, Inc., Bothell, Wash.
Filed May 3, 1985, Ser. No. 730,011
Term of patent 14 years
U.S. Cl. D24—1.1

285,485
REFRACTOMETER
Robert M. Kahute, Honeoye Falls, N.Y., assignor to Warner-Lambert Technologies, Inc., Southbridge, Mass.
Filed Nov. 25, 1983, Ser. No. 555,306
Term of patent 14 years
U.S. Cl. D24—17

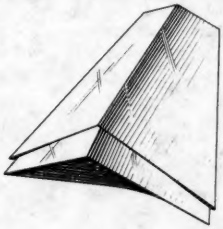


285,486
BIOLOGICAL REACTION CELL
Vincent A. Marinkovich, Palo Alto; William J. Sell, San Francisco, and David H. Riege, Newark, all of Calif., assignors to Mast Immunosystems, Ltd., Mountain View, Calif.
Filed Jan. 16, 1984, Ser. No. 570,957
Term of patent 14 years
U.S. Cl. D24—29

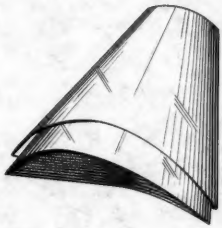


285,487
LABORATORY FILTER
Gerald P. Tjernagel, North Mankato, Minn., assignor to Trend Scientific, Inc., Minneapolis, Minn.
Filed Jul. 18, 1983, Ser. No. 514,623
Term of patent 14 years
U.S. Cl. D24—29

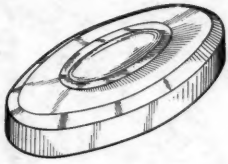
285,488
CORNER LAMP
James P. Russell, 555 W. Shore Trail, Sparta, N.J. 07871
Filed May 7, 1984, Ser. No. 607,781
Term of patent 14 years
U.S. Cl. D26—86



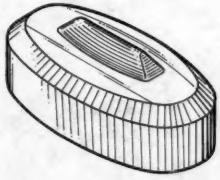
285,489
CORNER LAMP
James P. Russell, 555 W. Shore Trail, Sparta, N.J. 07871
Filed May 7, 1984, Ser. No. 607,782
Term of patent 14 years
U.S. Cl. D26—86



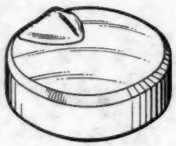
285,490
PHARMACEUTICAL TABLET
Geoffrey D. Tovey, Harpenden, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England
Filed Jan. 23, 1984, Ser. No. 573,234
Term of patent 14 years
U.S. Cl. D28—2



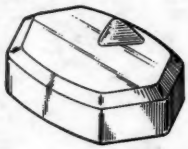
285,491
PHARMACEUTICAL TABLET
Geoffrey D. Tovey, Harpenden, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England
Filed Dec. 28, 1984, Ser. No. 687,219
Term of patent 14 years
U.S. Cl. D28—2



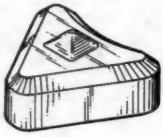
285,492
PHARMACEUTICAL TABLET
Geoffrey D. Tovey, Harpenden, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England
Filed Dec. 28, 1984, Ser. No. 687,220
Claims priority, application United Kingdom, Jul. 2, 1984, 1020682
Term of patent 14 years
U.S. Cl. D28—2



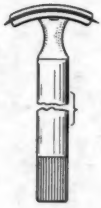
285,493
PHARMACEUTICAL TABLET
Geoffrey D. Tovey, Harpenden, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England
Filed Dec. 28, 1984, Ser. No. 687,317
Term of patent 14 years
U.S. Cl. D28—2



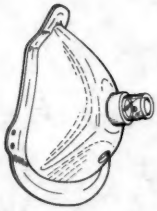
285,494
PHARMACEUTICAL TABLET
Geoffrey D. Tovey, Harpenden, United Kingdom, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England
Filed Dec. 28, 1984, Ser. No. 687,406
Term of patent 14 years
U.S. Cl. D28—2



285,495
MUSTACHE TRIMMER
Walter Buddie, 1477 S. Sheldon Rd., Apt. #2, Plymouth, Mich. 48170
Filed Feb. 16, 1984, Ser. No. 580,972
Term of patent 14 years
U.S. Cl. D28—46



285,496
INHALATION MASK
Seymour S. Berman, Farmington Hills, Mich., assignor to Oxygen Therapy Institute, Inc., Ferndale, Mich.
Filed Oct. 27, 1983, Ser. No. 545,838
Term of patent 14 years
U.S. Cl. D29—8



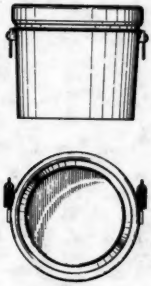
285,497
DISPOSABLE PROTECTIVE MASK
Sarah C. McElfresh, 225 Pembroke Ave., Wayne, Pa. 19087
Filed Feb. 24, 1984, Ser. No. 583,122
Term of patent 14 years
U.S. Cl. D29—8

285,498

PET WATERING VESSEL

Ronald M. Thibault, Osborne, Kans., assignor to Osborne Industries, Inc., Osborne, Kans.

Filed Oct. 24, 1983, Ser. No. 544,684
Term of patent 14 years
U.S. Cl. D30—16

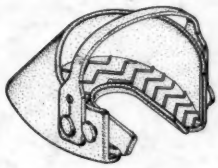


285,499

HORSESHOE ASSEMBLY

Kisaku Nakanishi, Ebisuminami 2-3-3, Shibuya-ku, Tokyo, Japan

Filed Feb. 7, 1984, Ser. No. 577,663
Term of patent 14 years
U.S. Cl. D30—35



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2ND DAY OF SEPTEMBER, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See*—
Lunsford, Carl D.; and Chen, Ying-Ho, 4,609,735, Cl. 546-302.000.

Abbat, Jean-Pierre, to ITT Corporation. Flexible diaphragm keypad and method of manufacture. 4,609,791, Cl. 200-5.00A.

Abbes, Claude; Rouaud, Christian; Valla, Jean; de Villepoix, Raymond; Demay, Robert; and Forges, Robert, to Commissariat a l'Energie Atomique. Remotely disassemblable connection device. 4,609,211, Cl. 285-325.000.

Abel, Joachim; and Rovira, Juan, to WABCO Westinghouse Fahrzeugbremsen GmbH. Electropneumatic coupling element for providing a pressure-tight connection between a pressure supply line and a pressure supply connection. 4,609,239, Cl. 339-15.000.

ACF Industries, Incorporated: *See*—
Ruhmann, Douglas C.; Britton, Ralph A.; Mundloch, James D.; and Vorwerk, Frederick E., 4,608,931, Cl. 105-248.000.

Achard, Jean-Claude: *See*—
Percheron nee Guegan, Annick; Achard, Jean-Claude; Bronoel, Guy; and Sarradin, Joel, 4,609,599, Cl. 429-218.000.

Acock, George W., Jr.: *See*—
Rhodes, James; Wren, Michael; Lantz, Paul W.; and Acock, George W., Jr., 4,608,785, Cl. 52-2.000.

Adachi, Iwao P.; and Yamada, Yahiko, to Price, Joseph W. Diode laser collimator. 4,609,258, Cl. 350-395.000.

Adamek, David J., to Waldorf Corporation. Reclosable dispenser carton and blank therefor. 4,609,142, Cl. 229-17.0SC.

ADC Telecommunications, Inc.: *See*—
Kemppainen, Nels E., 4,609,242, Cl. 339-17.0LC.

ADE, Inc.: *See*—
Kasper, Kevin; and Nigro, Paul, 4,609,104, Cl. 206-334.000.

Adler, Robert J.; Brosilow, Coleman B.; Brown, William R.; and Gardner, Nelson C., to CNG Research Company. Gas separation process. 4,609,388, Cl. 62-12.000.

Adler, Roy L.; Franaszek, Peter A.; Hassner, Martin; and Schneider, Richard C., to International Business Machines Corporation. Dual channel partial response system. 4,609,907, Cl. 340-347.0DD.

Administratie - en Automatisergscentrum Vulcaan B.V.: *See*—
Pasterkamp, Klaas, 4,609,059, Cl. 177-50.000.

Adolph Coors Company: *See*—
Grims, Conrad M., 4,608,843, Cl. 72-4.000.

Advanced Micro Devices, Inc.: *See*—
Haskell, Jacob D., 4,609,934, Cl. 357-42.000.
Moller, Ole H.; and Po Loi Chu, Paul, 4,610,004, Cl. 365-230.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Percheron nee Guegan, Annick; Achard, Jean-Claude; Bronoel, Guy; and Sarradin, Joel, 4,609,599, Cl. 429-218.000.

Agence Nationale de Valorisation de la Rechere (ANVAR): *See*—
Bloyet, Emile; Leprince, Philippe; and Marec, Jean, 4,609,808, Cl. 219-121.0PR.

Agency of Industrial Science & Technology: *See*—
Ishikawa, Hiroshi; Oguro, Keisuke; Suzuki, Hiroshi; Kato, Akihiko; Okada, Teruya; Sakamoto, Shizuo; Nishimura, Iwao; and Sakaguchi, Keizo, 4,609,038, Cl. 165-104.120.
Seimiya, Kouichi; and Nakagami, Kenji, 4,609,450, Cl. 204-217.000.

Agfa Gevaert Aktiengesellschaft: *See*—
Frank, Karl, 4,609,616, Cl. 430-430.000.

Aida Engineering, Ltd.: *See*—
Uehara, Tadayoshi, 4,609,011, Cl. 137-624.150.

Aihara, Takao, to Osada Electric Co., Ltd. Laser hand piece. 4,608,980, Cl. 128-303.100.

Aihara, Yoshihiko: *See*—
Iwashita, Tomonori; and Aihara, Yoshihiko, 4,609,274, Cl. 354-400.000.

Aikawa, Renji: *See*—
Morishita, Masataka; Aikawa, Renji; and Yamamoto, Yoshiaki, 4,609,640, Cl. 514-12.000.

Air-O-Scoop Corporation: *See*—
Chatlos, Richard, 4,608,915, Cl. 98-2.120.

Air Products and Chemicals, Inc.: *See*—
Carr, Richard V. C., 4,609,759, Cl. 564-395.000.
Hausman, Mary L.; Lenney, William E.; and Miller, Gerald D., 4,609,704, Cl. 524-710.000.

Aisin Seiki Co., Ltd.: *See*—
Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, 4,608,778, Cl. 49-352.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Nakatsuhara, Youichi, 4,609,077, Cl. 188-73.380.
Takahashi, Shigeo, 4,609,013, Cl. 137-637.000.

Akami, Ichio: *See*—
Kogure, Tsuneo; Tsuchiyama, Yuji; Amano, Tadashi; Takahashi, Hideaki; Sekita, Katsuji; and Akami, Ichio, 4,608,852, Cl. 72-389.000.

Aktiebolaget Hassle: *See*—
Szelke, Michael; Jones, David M.; and Hallett, Allan, 4,609,643, Cl. 514-16.000.

Akutsu, Shigemitsu: *See*—
Nakano, Yasuhiko; and Akutsu, Shigemitsu, 4,608,949, Cl. 123-73.00A.

Albers, Gunter, to Phoenix Aktiengesellschaft. Hot melt adhesive for bonding articles made of ethylene-propylene terpolymer. 4,609,697, Cl. 524-68.000.

Albert, David E., to Quinton Instrument Company. Blood flow measurement device and method. 4,608,993, Cl. 128-663.000.

Alberti, Giulio; Bartoli, Francesco; Costantino, Umberto; and Di Gregorio, Francesco, to ENI Ente Nazionale Idrocarburi. Inorganic cation exchangers and the process for their preparation. 4,609,484, Cl. 252-184.000.

Alcock, A. John: *See*—
Bourne, Orson L.; and Alcock, A. John, 4,609,876, Cl. 330-4.300.

Alcon Laboratories, Inc.: *See*—
Schafer, Rolf, 4,609,493, Cl. 252-546.000.
York, Billie M., Jr., 4,609,663, Cl. 514-278.000.

Aleem, Mohd A.; Flygare, Wayne A.; and Kruger, E. William, to Sundstrand Corporation. In-line constant speed drive and generator. 4,609,842, Cl. 310-112.000.

Alibran, Patrice: *See*—
Millot, Jean-Paul; Alibran, Patrice; Desfontaines, Guy; and Hittner, Dominique, 4,609,521, Cl. 376-173.000.

Allied Colloids Limited: *See*—
Farrar, David, 4,609,755, Cl. 560-217.000.

Allied Corporation: *See*—
Bach, Lloyd G.; and Colpaert, James J., 4,609,078, Cl. 188-73.430.
Navarette, Carlos A., 4,608,912, Cl. 92-5.00R.

Allied Products Corporation: *See*—
Good, Garry R., 4,609,051, Cl. 172-266.000.

Aloj, Salvatore M.: *See*—
Kohn, Leonard D.; Valente, William A.; Grollman-Wolff, Evelyn F.; Aloj, Salvatore M.; and Vitti, Paolo, 4,609,622, Cl. 435-29.000.

Alps Electric Co., Ltd.: *See*—
Nakashima, Keishi; Hatanai, Takashi; Mukasa, Koichi; and Shimada, Yutaka, 4,609,593, Cl. 428-611.000.

Alsthom: *See*—
Nicoloso, Dante, 4,609,798, Cl. 200-148.00R.

Alsthom-Atlantique: *See*—
Bray, Jean-Claude, 4,609,992, Cl. 364-508.000.
Coulon, Andre , 4,608,853, Cl. 72-434.000.
Labbe, Roland; and Quistrebert, Jean-Luc, 4,609,304, Cl. 405-170.000.

Altera Corporation: *See*—
Hartmann, Robert F.; Chan, Yiu-Fai; Frankovich, Robert; and Ou, Jung-Hsing, 4,609,986, Cl. 364-200.000.

Altomare, Robert E.: *See*—
Giacone, Joseph; Matias, Casimiro P.; Altomare, Robert E.; and Mao, Wei-Wen, 4,609,558, Cl. 426-549.000.
Mao, Wei-Wen; Altomare, Robert E.; Giacone, Joseph; and Matias, Casimiro P., 4,609,557, Cl. 426-549.000.

Aluminum Company of America: *See*—
Ballantyne, John A.; and Otto, William L., Jr., 4,608,850, Cl. 72-240.000.
Hornack, Thomas R.; and Chilko, Robert J., 4,609,249, Cl. 339-263.00E.
Kelly, Frank M., 4,608,805, Cl. 53-308.000.
Reich, Ronald A., 4,609,874, Cl. 324-438.000.
The, Paul J.; and Felix, William V., 4,609,534, Cl. 423-49.000.

ALZA Corporation: *See*—
Ayer, Atul D., 4,609,374, Cl. 604-892.000.

Amada Company, Limited: *See*—
Kogure, Tsuneo; Tsuchiyama, Yuji; Amano, Tadashi; Takahashi, Hideaki; Sekita, Katsuji; and Akami, Ichio, 4,608,852, Cl. 72-389.000.

Amano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Repeat control apparatus for a polling type serial interface keyboard apparatus. 4,609,908, Cl. 340-365.00S.

Amano, Tadashi: *See*—
Kogure, Tsuneo; Tsuchiyama, Yuji; Amano, Tadashi; Takahashi, Hideaki; Sekita, Katsuji; and Akami, Ichio, 4,608,852, Cl. 72-389.000.

Amellal, Odile. Volumetric measuring-dosing device for fluids. 4,609,128, Cl. 222-129.000.

American Cyanamid Company: *See*—
Morin, Louis G., 4,609,449, Cl. 204-206.000.

American Hoechst Corporation: *See*—
King, William M., Jr., 4,609,634, Cl. 502-24.000.

American Home Products Corporation: *See—*
Clark, Donald E.; and Grant, Norman H., 4,609,667, Cl. 514-367.000.
Husbands, George E. M., 4,609,758, Cl. 564-348.000.

American Standard Inc.: *See—*
Parkison, Richard G.; and Phillips, George E., 4,609,006, Cl. 137-119.000.

Anders, Peter. Separating device for door cases on floors with different heights. 4,608,781, Cl. 49-468.000.

Anderson-Greenwood USA, Inc.: *See—*
Anderson, William L., Jr.; McNeely, Michael D.; Weise, Irvin B., deceased; and Weise, Stanley A., executor, 4,609,008, Cl. 137-488.000.

Anderson, J. Reid: *See—*
Conner, Alfred W.; and Anderson, J. Reid, 4,609,963, Cl. 360-133.000.

Anderson, Karen L.; Goertzel, Gerald; and Mitchell, Joan L., to International Business Machines Corporation. Method for converting a bit map of an image to a run length or run end representation. 4,610,027, Cl. 382-56.000.

Anderson, Rickie W. Collapsible car top sign carrier. 4,609,133, Cl. 224-317.000.

Anderson, William L., Jr.; McNeely, Michael D.; Weise, Irvin B., deceased; and by Weise, Stanley A., executor, to Anderson-Greenwood USA, Inc. Non-flowing pressure responsive pilot valve. 4,609,008, Cl. 137-488.000.

Andrews, Nicholas W., to Motorola, Inc. Adaptive servomotor control. 4,609,855, Cl. 318-561.000.

Anic, S.p.A.: *See—*
Neri, Carlo; and Buonomo, Franco, 4,609,765, Cl. 568-430.000.

Annen, Klaus: *See—*
Rohde, Ralph; Annen, Klaus; Neef, Gunter; Wiechert, Rudolf; Beier, Sybille; Elger, Walter; and Henderson, David, 4,609,651, Cl. 514-179.000.

Annoot, Ira R., to Houston Geophysical Products, Inc. Connector having two seal-rings of different diameters. 4,609,247, Cl. 339-60.00M.

Anspach, William E., Jr.; and Toborowsky, Michael S. Endoscope retainer and tissue retracting device. 4,608,965, Cl. 128-4.000.

Anthony, Thomas R., to General Electric Company. Nonplanar ion-sensitive field-effect transistor devices. 4,609,932, Cl. 357-25.000.

Aoyagi, Juuro; Takahara, Kazuaki; and Seita, Yukio, to Terumo Kabushiki Kaisha. Hollow fibers for use in dialysis and artificial kidney. 4,609,464, Cl. 210-321.300.

Applications Mecaniques et Robinetterie Industrielle A.M.R.I.: *See—*
Bonafous, Maurice, 4,608,913, Cl. 92-134.000.

Aquanautics Corporation: *See—*
Bonaventura, Joseph; Bonaventura, Celia; Van Ryzin, Joseph C.; and Zenner, Bruce D., 4,609,383, Cl. 55-16.000.

Arai, Yoshihiro; Nahara, Akira; Nagao, Makoto; and Fukino, Kiyotaka, to Fuji Photo Film Co., Ltd. Magnetic recording medium having improved weather resistance. 4,609,962, Cl. 360-131.000.

Araki, Tamio: *See—*
Yatsunami, Joji; and Araki, Tamio, 4,609,024, Cl. 152-527.000.

Araki, Yozo, to Mitsubishi Jukogyo Kabushiki Kaisha. Apparatus for filling bags. 4,608,803, Cl. 53-202.000.

Aralt, Per T., to Bergen Patentkontor. Process and apparatus for the transport of powdered or particulate material. 4,609,309, Cl. 406-56.000.

Arbogast, Thomas P.; and Eilola, David, to Wickes Manufacturing Company. Fluid level sensor. 4,609,913, Cl. 340-622.000.

Arc Technologies Systems Ltd.: *See—*
Hill, Derek; Lauterbach-Dammler, Inge; Taube, Tom; and Zollner, Dieter, 4,610,015, Cl. 373-93.000.

Arimatu, Toshiharu: *See—*
Tajiri, Koji; and Arimatu, Toshiharu, 4,608,736, Cl. 28-220.000.

Arlt, Manfred, to Heidelberger Druckmaschinen AG. Sheet transfer cylinder in sheet-fed rotary printing machines. 4,608,925, Cl. 101-411.000.

Armco Inc.: *See—*
Long, W. Herbert, 4,609,577, Cl. 428-683.000.

Armstrong, Gordon P.: *See—*
Pollet, Jean-Claude; Armstrong, Gordon P.; and Flautt, Martin C., 4,609,591, Cl. 428-391.000.

Arques, Marc: *See—*
Munier, Bernard; and Arques, Marc, 4,609,824, Cl. 250-578.000.

Artaud, Daniel: *See—*
Dominguez, Mariano; and Artaud, Daniel, 4,610,030, Cl. 455-113.000.

Artru, Regis: *See—*
Guiu, Claude; and Artru, Regis, 4,608,900, Cl. 83-766.000.

Aruga, Masahiro. Recording and reconstructing digital data. 4,609,951, Cl. 360-46.000.

Asai, Kachio; and Tsuruga, Yuji, to Iwatsu Electric Co., Ltd.; and Rohm Company Limited. Power supply providing stabilized DC from an input voltage of AC superposed on DC without disturbing the input voltage. 4,609,863, Cl. 323-223.000.

Asano, Masaharu; Kawamura, Yoshihisa; and Nakagawa, Toyoaki, to Nissan Motor Company, Limited. Device and method for measuring a temperature difference. 4,609,292, Cl. 374-144.000.

Aschenbeck, David P., to Owens-Corning Fiberglas Corporation. Method for determining binder content and degree of cure in a fibrous mat. 4,609,628, Cl. 436-34.000.

Ashizaki, Shigeya; Kimura, Masamichi; and Taniguchi, Masato, to Matsushita Electronics Corporation. Cathode ray tube with magnetic pole pieces which support a ring getter. 4,609,847, Cl. 313-413.000.

Ashland Oil, Inc.: *See—*
Gruber, Norma J.; and Powell, Clois E., 4,609,690, Cl. 523-334.000.

Astill, Maurice J. Rotatable stand. 4,609,111, Cl. 211-1.500.

AT&T Bell Laboratories: *See—*
Miller, Ronald E.; and Stark, Antony A., 4,610,032, Cl. 455-325.000.

Atlantic Richfield: *See—*
Blaschke, Marilyn W.; Miller, Richard F.; and Link, John, 4,609,747, Cl. 556-77.000.

Atlantic Richfield Company: *See—*
Ingram, Alvin R., 4,609,681, Cl. 521-57.000.
Younes, Usama E., 4,609,711, Cl. 525-186.000.

Atlas Copco Aktiebolag: *See—*
Ragnmark, Karl-Goran B., 4,609,053, Cl. 173-104.000.

Atlas Fahrzeugtechnik GmbH: *See—*
Blauhut, Reinhold, 4,608,855, Cl. 73-35.000.

ATOCHEM: *See—*
Braunstein, Pierre; Kervennal, Jacques; Richert, Jean-Luc; and Ries, Michel, 4,609,639, Cl. 502-326.000.

Attane, Jacques, to Auxilec. Connecting device between a lubricated motor and a rotating electric machine. 4,609,072, Cl. 184-6.110.

Attard, Salvatore: *See—*
Kosson, Robert; Bilenas, Jonas; Attard, Salvatore; and Hilgeman, Theodore, 4,609,034, Cl. 165-1.000.

Attri, Arun K.: *See—*
Minton, Allen P.; Attri, Arun K.; Sullivan, James V.; and Fitze, Paul, 4,609,991, Cl. 364-499.000.

Audren, Jean-Thierry, to Societe de Fabrication d'Instruments de Mesure (S.F.I.M.). Gyroscope apparatus rotating casing for a rotor. 4,608,874, Cl. 74-5.410.

Augat Inc.: *See—*
Wyss, Robert P., 4,609,243, Cl. 339-17.00M.

Augustyn, James A.: *See—*
Porps, Thomas A.; and Augustyn, James A., 4,609,070, Cl. 182-18.000.

Ault Foods Limited: *See—*
Barua, Nripen N.; and Hampton, Richard J., 4,609,554, Cl. 426-43.000.

Austin, Charles S.: *See—*
Ivey, James H., 4,608,902, Cl. 83-875.000.

Automobiles Citroen: *See—*
Gabrielli, Gino, 4,609,325, Cl. 414-755.000.

Automobiles Peugeot: *See—*
Gabrielli, Gino, 4,609,325, Cl. 414-755.000.

Automotive Engine Associates: *See—*
Showalter, Merle R., 4,609,342, Cl. 431-2.000.

Automotive Products plc: *See—*
Shirley, Graham J., 4,609,087, Cl. 192-85.0CA.

Autotrol Corporation: *See—*
Beemster, Bernard J.; and Goudy, Paul R., Jr., 4,609,471, Cl. 210-748.000.

Auxilec: *See—*
Attane, Jacques, 4,609,072, Cl. 184-6.110.

Avco Corporation: *See—*
Long, James R.; and Harrill, Roy L., 4,610,013, Cl. 371-9.000.

Aviram, Ari; and Dove, Derek B., to International Business Machines Corporation. Ribbon transfer color-on-demand resistive ribbon printing. 4,609,926, Cl. 346-76.0PH.

Avram, Elena: *See—*
Revici, Emanuel, 4,609,552, Cl. 424-164.000.

Awano, Yoshiroh: *See—*
Kishi, Tomomi; Awano, Yoshiroh; and Takao, Yasuhide, 4,609,804, Cl. 219-74.000.

Aydin, Oral; Kast, Hans; and Fricke, Hans-Joachim, to BASF Aktiengesellschaft. Adhesion of layers of adhesive which are applied onto polyolefin surfaces from aqueous dispersion. 4,609,420, Cl. 156-272.600.

Ayer, Atul D., to ALZA Corporation. Osmotic device comprising means for governing initial time of agent release therefrom. 4,609,374, Cl. 604-892.000.

Azcorp Technology: *See—*
Clark, Keith S., 4,609,780, Cl. 179-2.00A.

B & W Electronic Enclosures, Inc.: *See—*
LeMieux, David M.; Dodenhoff, John A., deceased; and Papitto, Ralph, executor, 4,609,774, Cl. 174-152.0GM.

Baba, Hiroshi: *See—*
Mizuno, Masahiro; and Baba, Hiroshi, 4,609,953, Cl. 360-78.000.

Babish, John G.: *See—*
Davidson, Jeffrey; Babish, John G.; and Wedig, John H., 4,609,665, Cl. 514-335.000.

Bach, Joseph: *See—*
Boyer, Stephen K.; Gelotte, Karl O.; and Bach, Joseph, 4,609,733, Cl. 546-273.000.

Bach, Lloyd G.; and Colpaert, James J., to Allied Corporation. Spring entrapment of split wedge floatation device. 4,609,078, Cl. 188-73.430.

Bachhofer, Bruno; and Locher, Anton. High-voltage transformer with liquid cooling. 4,609,900, Cl. 336-58.000.

Backlund, Drew. Exhaust accessory unit for internal combustion engines. 4,609,068, Cl. 181-226.000.

Badger Meter, Inc.: *See—*
Powers, William H., 4,609,176, Cl. 251-30.040.

Badolato, Vincent G.; and Epperson, Billy G., to Badolato, Vincent G. Eyeglass display case. 4,609,975, Cl. 362-125.000.

Baird, James C.: *See—*
Curro, John J.; Baird, James C.; Gerth, Donald L.; Vernon, George M.; and Linman, E. Kelly, 4,609,518, Cl. 264-504.000.

Baker, Joe L.; and Brown, Thomas R., to J. I. Case Company. Cab door structure and hold-open mechanism. 4,609,216, Cl. 292-262.000.

Baker, Roger W.: *See—*
Sumins, Edmund J.; and Baker, Roger W., 4,608,728, Cl. 15-250.320.

Baker, Thompson A.: *See—*
McIlvaine, George V.; Baker, Thompson A.; and Uebelacker, Walter U., 4,609,090, Cl. 193-47.000.

Baker, William A., to PT Components, Inc. Magnetic clutch. 4,609,965, Cl. 361-160.000.

Bakkum, Jacobus T. M., to Dow Chemical Company, The. Process for decolorizing polyethylene polyamines with a chlorinated hydrocarbon. 4,609,436, Cl. 203-6.000.

Baldwin, John J.; Claremon, David A.; and McClure, David E., to Merck & Co., Inc. 5-acetyl-3,4,5,6-tetrahydro-4-oxo-2,6-methano-2H-1,3,5-benzothiazocine(benzodiazocine)-11-carboxylates useful as calcium channel blockers. 4,609,494, Cl. 260-243.300.

Ball, Dean M., to Fontana, John; and Fontana, Don. Intravenous solution administration apparatus and method. 4,609,369, Cl. 604-56.000.

Ball, Gregory A.; Moore, Byron E.; Haynes, John D.; and Moser, James N., to Cannon Mills Company. Apparatus for automatically fabricating cut and edge stitched textile articles. 4,608,936, Cl. 112-121.120.

Ballantyne, John A.; and Otto, William L., Jr., to Aluminum Company of America. Alligator defect elimination. 4,608,850, Cl. 72-240.000.

Banasiak, Dennis S.; Mozdzen, Edward C.; and Byers, Jim D., to Phillips Petroleum Company. Preparation of gossyplure. 4,609,498, Cl. 260-410.90R.

Banks, Robert L.: *See—*
Kukes, Simon; and Banks, Robert L., 4,609,769, Cl. 585-646.000.

Bannell, John L. K.; and Paul, Donald M., to Shell Oil Company. Method and apparatus for surveying positions of mooring lines. 4,610,007, Cl. 367-104.000.

Bardsley, Harold B., to Spencer Wright Industries, Inc. Tufting machine yarn feed roller assembly. 4,608,935, Cl. 112-79.00A.

Barfurth, Dieter; and Nestler, Heinz, to Dynamit Nobel AG. Water-soluble zirconic acid esters. 4,609,745, Cl. 556-40.000.

Barfurth, Dieter; and Nestler, Heinz, to Dyanmit Nobel AG. Titanium chelates and preparation of these chelates. 4,609,746, Cl. 556-40.000.

Barker, Thomas L. Saw-splitter machine. 4,609,018, Cl. 144-3.00K.

Barmag Barmer Maschinenfabrik AG: *See—*
Moore, George F., Jr.; and Krenzer, Eberhard, 4,608,814, Cl. 57-7.000.
Runkel, Walter; Lenk, Erich; and Bauer, Karl, 4,609,344, Cl. 432-59.000.

Barnes, Robert S.: *See—*
Campbell, James R., 4,608,845, Cl. 72-44.000.

Barnett, Scott L.; and Fariss, Gary M., to Minnesota Mining and Manufacturing Company. Abrasive wheels. 4,609,380, Cl. 51-298.000.

Bartoli, Francesco: *See—*
Alberti, Giulio; Bartoli, Francesco; Costantino, Umberto; and Di Gregorio, Francesco, 4,609,484, Cl. 252-184.000.

Barua, Nripen N.; and Hampton, Richard J., to Ault Foods Limited. Aseptic yoghurt. 4,609,554, Cl. 426-43.000.

BASF Aktiengesellschaft: *See—*
Aydin, Oral; Kast, Hans; and Fricke, Hans-Joachim, 4,609,420, Cl. 156-272.600.
Heinze, Jurgen; and Mortensen, John, 4,609,600, Cl. 429-197.000.
Kemper, Reinhard; and Liedek, Egon, 4,609,726, Cl. 534-760.000.

BASF Corporation: *See—*
Crema, Stefano C., 4,609,477, Cl. 252-8.550.

BASF Farben & Fasern AG: *See—*
Geist, Michael; Ott, Gunther; and Schon, Georg, 4,609,691, Cl. 523-415.000.

Bassim, M. Nabil; and Tangri, Kris, to University of Manitoba, The. Apparatus for continuous long-term monitoring of acoustic emission. 4,609,994, Cl. 364-551.000.

Bauer, Eric; and Moulin, Blaise, to Caracteres S.A. Character-carrying disc for a printing machine. 4,609,296, Cl. 400-175.000.

Bauer, Karl: *See—*
Runkel, Walter; Lenk, Erich; and Bauer, Karl, 4,609,344, Cl. 432-59.000.

Baumann, Hans D. Diaphragm type control valve. 4,609,178, Cl. 251-229.000.

Baustahlgewebe GmbH: *See—*
Sotonyi, Thomas; Webers, Heinz; and Elle, Erich, 4,609,802, Cl. 219-56.000.

Bavelloni, Franco, to Z. Bavelloni S.p.A. Feeler unit for positioning sheet glass processing tools. 4,608,783, Cl. 51-127.000.

Bayer Aktiengesellschaft: *See—*
Bohm, Siegfried; LeBlanc, Helmut; and Wedemeyer, Karlfried, 4,609,760, Cl. 564-402.000.
Dorlars, Alfons; Blank, Heinz U.; Nordt, Herbert, deceased; and Trescher, Viktor, 4,609,756, Cl. 562-495.000.
Gruber, Hermann; and Fehlbier, Alois, 4,609,572, Cl. 427-385.500.
Hoffmann, Hellmut; Kruger, Bernd-Wieland; and Behrenz, Wolfgang, 4,609,646, Cl. 514-77.000.
Meyer, Rolf-Volker; Reinking, Klaus; Idel, Karsten-Josef; and Dhein, Rolf, 4,609,699, Cl. 524-100.000.
Schwabe, Peter; and Voigt, Reiner, 4,609,687, Cl. 523-109.000.
Schwamborn, Michael; Hagemann, Hermann; Heywang, Gerhard; and Behrenz, Wolfgang, 4,609,648, Cl. 514-84.000.
Weber, Christian; Konig, Klaus; and Schmidt, Manfred, 4,609,682, Cl. 521-117.000.

Bayer Aktiengesselschaft: *See—*
Behre, Horst; Blank, Heinz U.; and Schossler, Willi, 4,609,503, Cl. 260-509.000.

Bayer, Franz, to Franz Xaver Bayer Isolierglasfabrik KG. Connector for use in spacers for multiple-pane windows. 4,608,802, Cl. 52-788.000.

Bayer, Oswald; Grehn, Martin; Hey, Edwin; Lorosch, Hans-Karl; and Vogel, Walter, to FAG Kugelfischer Georg Schafer (KGaA). Lubrication feed bushing for anti-friction bearings. 4,609,293, Cl. 384-469.000.

Baylor College of Medicine: *See—*
Kit, Malon; and Kit, Saul, 4,609,548, Cl. 424-89.000.

BBC Brown, Boveri & Company, Limited: *See—*
Hilpert, Bruno, 4,609,970, Cl. 361-399.000.

Beach, Ronald I.: *See—*
Hardman, Harley F.; and Beach, Ronald I., 4,609,678, Cl. 518-713.000.

Beam, Tony D. Downspout for building gutters or the like. 4,608,786, Cl. 52-16.000.

Becher, Michael G.; and Ke, Victor H., to Frito-Lay, Inc. Topical flavoring composition for baked products. 4,609,555, Cl. 426-94.000.

Beck, Bernd A. W.: *See—*
Spranger, Kurt; and Beck, Bernd A. W., 4,609,728, Cl. 536-56.000.

Becker, Franklin H.; Becker, Marcia R.; and Hancock, Dane R. Beverage brewing apparatus. 4,608,916, Cl. 99-283.000.

Becker, Marcia R.: *See—*
Becker, Franklin H.; Becker, Marcia R.; and Hancock, Dane R., 4,608,916, Cl. 99-283.000.

Becker, Robert W.; Keck, Timothy A.; and Madsen, John E., to General Motors Corporation. Twin winding three-phase alternator with zero slot coupling. 4,609,862, Cl. 322-90.000.

Becker, Wolfgang: *See—*
Muck, Hajo; and Becker, Wolfgang, 4,609,207, Cl. 283-70.000.

Becking, Paul E. Printer ribbon cartridge loading system. 4,609,422, Cl. 156-502.000.

Becton, Dickinson and Company: *See—*
Conway, Hugh T., 4,608,997, Cl. 128-763.000.
Sage, Burton H., Jr., 4,609,286, Cl. 356-73.000.
Schwartz, Abraham; Williams, Joel; and Stevens, Robert D., 4,609,689, Cl. 523-202.000.
Wilner, Leslie B., 4,609,968, Cl. 361-320.000.

Bedos, Thierry; Clerissi, Roland; Vallee, Jacques; and Nguyen Xuan, Kiet, to Thomson CSF. Method and device for displaying primary colors utilizing input values representative of brightness, saturation and hue of a colored background. 4,609,916, Cl. 340-703.000.

Beecham Group p.l.c.: *See—*
Garman, Andrew J.; and Wheeler, Alan, 4,609,547, Cl. 424-88.000.
Milner, Peter H., 4,609,652, Cl. 514-194.000.
Ponsford, Roger J.; and Howarth, Thomas T., 4,609,495, Cl. 540-349.000.

Beemster, Bernard J.; and Goudy, Paul R., Jr., to Autotrol Corporation. Laser disinfection of fluids enhanced by gas bubbles. 4,609,471, Cl. 210-748.000.

Behling, William C.: *See—*
Walker, Jerry L.; Crummett, Donald L.; and Behling, William C., 4,609,057, Cl. 175-4.600.

Behre, Horst; Blank, Heinz U.; and Schossler, Willi, to Bayer Aktiengesselschaft. Process for the preparation of 1-amino-8-naphthol-4,6-disulphonic acid (k-acid). 4,609,503, Cl. 260-509.000.

Behrenz, Wolfgang: *See—*
Hoffmann, Hellmut; Kruger, Bernd-Wieland; and Behrenz, Wolfgang, 4,609,646, Cl. 514-77.000.
Schwamborn, Michael; Hagemann, Hermann; Heywang, Gerhard; and Behrenz, Wolfgang, 4,609,648, Cl. 514-84.000.

Beier, Sybille: *See—*
Rohde, Ralph; Annen, Klaus; Neef, Gunter; Wiechert, Rudolf; Beier, Sybille; Elger, Walter; and Henderson, David, 4,609,651, Cl. 514-179.000.

Belanger, Claude M., executor: *See—*
Belanger, Joseph A. A., deceased; and Belanger, Claude M., executor, 4,609,112, Cl. 211-45.000.

Belanger, Joseph A. A., deceased; and by Belanger, Claude M., executor. Filing apparatus. 4,609,112, Cl. 211-45.000.

Belik, Vladimir G.: *See—*
Scheglov, Jury A.; Koval, Nikolai P.; Furer, Leonid A.; Zargarian, Sergei Y.; Skimbov, Anatoly A.; Belik, Vladimir G.; Zharik, Boris N.; Papchenko, Andrei Y.; Ryabinsky, Filipp G.; Sergeev, Alexandr S., deceased; and Sergeeva, Galina A., administrator, 4,608,920, Cl. 99-451.000.

Bell, Jerry L.; Douma, John D.; Keinath, David P.; and Moore, Robert E., to Bernal Rotary Systems, Inc. Rotary die cutting. 4,608,895, Cl. 83-345.000.

Belli, Aldo: *See—*
Giordano, Claudio; Belli, Aldo; Uggeri, Fulvio; and Villa, Giovanni, 4,609,766, Cl. 568-592.000.

Belokin, Martin P., to Martin-Paul, Inc. Magnetically attachable towel hanger. 4,609,173, Cl. 248-225.100.

Beltzer, Morton: *See—*
Craig, Raymond C.; Panzer, Jerome; Wisotsky, Max J.; and Beltzer, Morton, 4,609,376, Cl. 44-53.000.

Belzer Dowidat GmbH: *See—*
Mayer, Eberhard; Mohilo, Oskar; and Koltermann, Jurgen, 4,608,872, Cl. 73-862.230.

Benarrouch, Jacques. Household-type dishwashing utensil. 4,609,301, Cl. 401-196.000.

Bendiberica S.A.: *See*—
Rosell, Jorge E., 4,608,876, Cl. 74-388.0PS.

Bengtsson, Uno. Log debarker. 4,609,021, Cl. 144-208.00D.

Benvenuti, Livio, to Piaggio & C. S.p.A. Safety interlock for a motor vehicle engine starting circuitry. 4,608,953, Cl. 123-335.000.

Beranek, William J.; and Saulson, Stanley H., to Cordis Corporation. Pacing lead with straight wire conductors. 4,608,986, Cl. 128-786.000.

Berfield, Robert C.; and Crevling, Robert L., to Shop-Vac Corporation. Collapsible support cage for vacuum cleaner filter. 4,609,387, Cl. 55-320.000.

Bergen Patentkontor: *See*—
Aralt, Per T., 4,609,309, Cl. 406-56.000.

Berger, Jean L.; and Descure, Pierre, to Thomson-CSF. Charge transfer multi-linear strip. 4,609,823, Cl. 250-370.000.

Berger, Jean L.; and Brissot, Louis, to Thomson-CSF. Device for modulating the sensitivity of a line-transfer photosensitive device. 4,609,825, Cl. 250-578.000.

Berglund, Bengt, to Spiro Investment A.G. Throttled fluid mixing device. 4,609,506, Cl. 261-44.00A.

Bergquist, Lyle E., to Martin Marietta Corporation. Small component helium leak detector. 4,608,866, Cl. 73-40.700.

Bergsma, Rudolph, to Hi-Stat Michigan Manufacturing Co., Inc. Liquid level sensing switch. 4,609,796, Cl. 200-84.00C.

Bernal Rotary Systems, Inc.: *See*—
Bell, Jerry L.; Douma, John D.; Keinath, David P.; and Moore, Robert E., 4,608,895, Cl. 83-345.000.

Berner, Godwin; and Manse, Aloysius H., to Ciba Geigy Corporation. Photopolymerizable composition and process with liquid mixture of photoinitiators and ethylenically unsaturated compound. 4,609,612, Cl. 430-281.000.

Berrend, Richard E., to Oil-Rite Corporation. Multiple oiler assembly. 4,609,074, Cl. 184-81.000.

Bertrams, Josef; and Wey, Edmund, to W. Schlafhorst & Co. Device for dosing and injecting a small quantity of liquid into the splicing air of a pneumatic yarn splicing device. 4,608,816, Cl. 57-22.000.

Beyer, Hasso, to EKE Robotersysteme GmbH. Apparatus for driving two axes of the hand element of an industrial robot. 4,608,884, Cl. 74-665.00B.

Bhupathy, Mahadevan: *See*—
Cohen, Theodore; and Bhupathy, Mahadevan, 4,609,743, Cl. 549-397.000.

Bichsel, Heinz: *See*—
Rodrigues, Pedro; Bichsel, Heinz; and Wehner, Frank, 4,609,408, Cl. 148-2.000.

Bickel, Wolfgang, to Schlesinger GmbH & Co. Maschinenbau KG. Method and machine for manufacturing brushes. 4,609,228, Cl. 300-4.000.

Big-Inch Marine Systems, Inc.: *See*—
Miller, Jack E., 4,608,739, Cl. 29-421.00R.

Bilenas, Jonas: *See*—
Kosson, Robert; Bilenas, Jonas; Attard, Salvatore; and Hilgeman, Theodore, 4,609,034, Cl. 165-1.000.

Bimer, Thomas C.; Creps, Malvern L.; and Millis, Edwin G., to Texas Instruments Incorporated. Semiconductor slice cassette carrier. 4,609,103, Cl. 206-328.000.

Binzen, Willard, to Dravo Corporation. Rotary car dumper with dust collection system. 4,609,321, Cl. 414-291.000.

Bishop, Timothy E.; Coady, Clive J.; and Zimmerman, John M., to DeSoto, Inc. Ultraviolet curable buffer coatings for optical glass fiber based on long chain oxyalkylene diamines. 4,609,718, Cl. 528-49.000.

Bisson, Flavio, to Necchi Societa per Azioni. Fabric piece stacker applied to a sewing machine. 4,608,938, Cl. 112-121.290.

Blair, John J., to Dentsply Research & Development Corp. Apparatus to produce artificial dentures. 4,609,351, Cl. 433-55.000.

Blank, Heinz U.: *See*—
Behre, Horst; Blank, Heinz U.; and Schossler, Willi, 4,609,503, Cl. 260-509.000.
Dorlars, Alfons; Blank, Heinz U.; Nordt, Herbert, deceased; and Trescher, Viktor, 4,609,756, Cl. 562-495.000.

Blaschim S.p.A.: *See*—
Giordano, Claudio; Belli, Aldo; Uggeri, Fulvio; and Villa, Giovanni, 4,609,766, Cl. 568-592.000.

Blaschke, Marilyn W.; Miller, Richard F.; and Link, John, to Atlantic Richfield. Novel water-soluble antimony compounds and their preparation. 4,609,747, Cl. 556-77.000.

Blaseck, Klaus; and Hoffmeister, Lothar, to Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH. Remotely-controlled remote handling arrangement for a large-area cell of a nuclear facility. 4,609,323, Cl. 414-663.000.

Blauhut, Reinhold, to Atlas Fahrzeugtechnik GmbH. Circuit for the recognition of knocking of an Otto engine. 4,608,855, Cl. 73-35.000.

Blom, C. James, to Roxor Corporation. Elimination of internal reflections and diffractions from junctures in and at the periphery of, a segmented mirror. 4,609,266, Cl. 350-613.000.

Bloyet, Emile; Leprince, Philippe; and Marec, Jean, to Agence Nationale de Valorisation de la Rechere (ANVAR). Plasma generator. 4,609,808, Cl. 219-121.0PR.

Bloys, David W.; and Boyce, Dale W. Rail upholsterer. 4,608,740, Cl. 29-429.000.

Blum, Alvin S. Plastic film bag lyophilization system. 4,609,102, Cl. 206-216.000.

Blum, Dietmar, to Julius Blum Gesellschaft m.b.H. Drilling machine. 4,609,310, Cl. 408-35.000.

Blum, Eric; and Pierce, Wilbur, to Champollion Incorporated. Cryptographic analysis system. 4,610,025, Cl. 382-9.000.

Bluzer, Nathan: *See*—
Richards, Ernie; and Bluzer, Nathan, 4,610,019, Cl. 377-58.000.

BMD Badische Maschinenfabrik Durlach GmbH: *See*—
Kobel, Alfons; Damm, Norbert; Geiger, Werner; and Muller, Gunter, 4,609,033, Cl. 164-169.000.

Boan, Bobby J.; Schwam, Martin; Sullivan, Marvin R.; and Morse, Amos W., to Harris Corporation. Gold-plated tungsten knit RF reflective surface. 4,609,923, Cl. 343-897.000.

Bobb, Lloyd C., to United States of America, Navy. Temperature compensated optical fiber interferometric magnetometer. 4,609,871, Cl. 324-244.000.

Bode, Daniel; and DeGraaf, Henry J., to SCM Corporation. High solids coatings using unsaturated monoisocyanate adducts of alkyd resins. 4,609,706, Cl. 525-7.400.

Boecker, Juergen: *See*—
Romer, Rudolf; Boecker, Juergen; Klein, Klaus W.; Gersbach, Klaus; Winkelmann, Jurgen; and Rossmann, Winfried, 4,608,927, Cl. 102-521.000.

Boegli, Peter; and Heiz, Ulrich, to Inventio AG. Apparatus for controlling and for signal transmission in conveyor installations. 4,609,922, Cl. 343-6.80R.

Boehringer Mannheim GmbH: *See*—
Eggerer, Hermann; Hagenbruch, Bernd; Nguyen, Tran G.; Stegmeier, Karlheinz; and Pill, Johannes, 4,609,673, Cl. 514-542.000.

Boeing Company, The: *See*—
Jensen, Warren M.; and Wilkinson, William C., 4,609,586, Cl. 428-209.000.

Boele, Floris, to U.S. Philips Corporation. Appliance for mincing foodstuffs. 4,609,156, Cl. 241-199.120.

Bohland, Robert J.; Delamater, Charles E.; Elseser, John W.; and Gensamer, William L., to Diebold, Incorporated. Safety deposit box system. 4,608,932, Cl. 109-56.000.

Bohm, Siegfried; LeBlanc, Helmut; and Wedemeyer, Karlfried, to Bayer Aktiengesellschaft. Process for the preparation of 2,6-xylidine. 4,609,760, Cl. 564-402.000.

Bohman, Carl E.: *See*—
Strosser, Richard P.; and Bohman, Carl E., 4,609,984, Cl. 364-130.000.

Boland, Bernard W., to Motorola, Inc. Method for manufacturing and epitaxially isolated semiconductor utilizing etch and refill technique. 4,609,413, Cl. 148-175.000.

Bolsman, Theodorus A. B. M.: *See*—
Reisberg, Joseph; Verkouw, Hendrik T.; and Bolsman, Theodorus A. B. M., 4,609,474, Cl. 252-8.55D.

Bolte, Steven B.: *See*—
Knapp, John F.; Gruber, Robert J.; Floyd, Lawrence, Jr.; and Bolte, Steven B., 4,609,603, Cl. 430-39.000.

Bolton, Richard H.; and Cloutier, Robert P., to Eastman Kodak Company. Tracking servo for a disk player with a dc motor. 4,609,954, Cl. 360-78.000.

Bolton, Ron. Keyless door unlocking apparatus for automobiles. 4,608,886, Cl. 81-15.900.

Bonafous, Maurice, to Applications Mecaniques et Robinetterie Industrielle A.M.R.I. Actuator with pneumatic energy accumulator more especially for cock valves. 4,608,913, Cl. 92-134.000.

Bonaventura, Celia: *See*—
Bonaventura, Joseph; Bonaventura, Celia; Van Ryzin, Joseph C.; and Zenner, Bruce D., 4,609,383, Cl. 55-16.000.

Bonaventura, Joseph; Bonaventura, Celia; Van Ryzin, Joseph C.; and Zenner, Bruce D., to Aquanautics Corporation. Apparatus and method for extracting oxygen from fluids. 4,609,383, Cl. 55-16.000.

Bonjour, Eric L.; and Rocaboy, Alain J., to Compagnie Francaise des Petroles. Thermally insulated fluid transport line. 4,609,214, Cl. 285-47.000.

Boots, Robert T., to Vermeulen-Hollandia Octrooien II B.V. Open roof-construction for a vehicle. 4,609,222, Cl. 296-218.000.

Bopp, Warren G., to Eaton Corporation. Torsion damping mechanism. 4,608,883, Cl. 74-574.000.

Bordini, Giorgio, to Tetra Dev-Co. Valve arrangement on packing machines. 4,608,810, Cl. 53-551.000.

Borg-Warner Corporation: *See*—
Kountz, Kenneth J., 4,608,833, Cl. 62-228.100.

Born, Hans-Joachim; Duschka, Hartmut; Seyler, Gerhard; and Zerl, Wolfgang, to Siemens Aktiengesellschaft. Radiodiagnostic installation with a patient table and a primary radiation diaphragm. 4,609,940, Cl. 358-111.000.

Borodinsky, Lester: *See*—
King, Robert B.; and Borodinsky, Lester, 4,609,716, Cl. 526-310.000.

Borschneck, Anthony G. Emergency leg splint. 4,608,971, Cl. 128-85.000.

Boschert Inc.: *See*—
Small, Kenneth T., 4,609,828, Cl. 307-44.000.

Bosnyak, Robert J.; Chau, Hua T.; Goddard, Donald; and Wong, Sing, to Monolithic Memories, Inc. High conductance circuit for programmable integrated circuit. 4,609,998, Cl. 365-96.000.

Boston University, Trustees of: *See*—
Lerner, Cathy M., 4,608,869, Cl. 73-644.000.

Bottcher, Curd, to General Motors Corporation. Pivoting rear seat arrangement. 4,609,221, Cl. 296-65.00R.

Bouard, Philippe, to Thomson-CSF. Emitter finger structure in a switching transistor. 4,609,414, Cl. 148-179.000.

Bourne, Orson L.; and Alcock, A. John, to Canadian Patents and Development Limited. Short radiation pulse generation. 4,609,876, Cl. 330-4.300.

Boutier, Pierre G., to Verreries de Graville. Apparatus for the production of glass containers of the bottle and flask type having a medium or narrow aperture, using the blow-blow or press-blow process. 4,609,393, Cl. 65-229.000.

Bower, John H.: *See—*
Peschmann, Kristian R.; and Bower, John H., 4,610,021, Cl. 378-150.000.

Bowhay, Philip E. Vernier and/or dial caliper comparative reading point checking selective accessory attachments and their combinations. 4,608,759, Cl. 33-143.00M.

Boyce, Dale W.: *See—*
Bloys, David W.; and Boyce, Dale W., 4,608,740, Cl. 29-429.000.

Boyer, Stephen K.; Gelotte, Karl O.; and Bach, Joseph, to Ciba-Geigy Corporation. 3-keto-substituted-N-pyridylindoles. 4,609,733, Cl. 546-273.000.

Boyle, David E.: *See—*
Davidson, Albert C.; and Boyle, David E., 4,609,522, Cl. 376-212.000.

Bozinovic, Zoran. Zig-zag ball. 4,609,196, Cl. 273-128.00A.

Bozzetto, Gerardo: *See—*
Pilotto, Italo; and Bozzetto, Gerardo, 4,609,118, Cl. 220-3.000.

Braasch, Morris C. Portable pipe cutter. 4,608,755, Cl. 30-97.000.

Brady, Stephen F.; Napier, Mary A.; Nutt, Ruth F.; and Vandlen, Richard L., to Merck & Co., Inc. Cardiac atrial peptides. 4,609,725, Cl. 530-324.000.

Brandman, Yigal, to Zoran Corporation. Programmable logic gate. 4,609,830, Cl. 307-202.100.

Brandyberry, Dennis R.; and Kot, Kenneth M., to Goodyear Tire & Rubber Company, The. Single strand metal cord and method of making. 4,608,817, Cl. 57-213.000.

Brasher, Jerry W. Operator controlled variable force exercising machine. 4,609,189, Cl. 272-118.000.

Brasscraft Manufacturing Company: *See—*
Turner, Larry G.; Stanish, Leo S.; Kuttruff, Manfred; Budzinski, Walter J.; and MacDonald, Robert, 4,609,177, Cl. 251-175.000.

Bratcher, James E., to BratMck Company, Inc. Collapsible portable exercise table. 4,609,192, Cl. 272-144.000.

BratMck Company, Inc.: *See—*
Bratcher, James E., 4,609,192, Cl. 272-144.000.

Braun, Michael, to Siemens Aktiengesellschaft. Apparatus for determining active and/or reactive current and/or the power thereof in an inverter with a given input d-c voltage, especially in a pulsed inverter. 4,609,983, Cl. 363-98.000.

Braunstein, Pierre; Kervennal, Jacques; Richert, Jean-Luc; and Ries, Michel, to ATOCHEM. Heteropolymetallic clusters, methods of making such clusters, and catalysts utilizing such clusters. 4,609,639, Cl. 502-326.000.

Bray, Jean-Claude, to Alsthom-Atlantique. System for monitoring torsion damage to a composite line of shapes through a driving machine and a driven machine. 4,609,992, Cl. 364-508.000.

Breckenfelder, Ernst G., to UIP Engineered Products Corporation. Rubber bumper strip. 4,609,583, Cl. 428-140.000.

Breidenthal, Robert E.; Lotz, Daniel E.; and Russell, David A., to Washington Research Foundation. Apparatus for the noninvasive shock fragmentation of renal calculi. 4,608,979, Cl. 128-303.100.

Brennan, Edward J., to PTC Aerospace Inc. Emergency oxygen system for aircraft. 4,609,166, Cl. 244-118.500.

Brentham, Jerry D. Physical fitness diagnostic testing apparatus. 4,609,190, Cl. 272-130.000.

Bridgestone Corporation: *See—*
Yatsunami, Joji; and Araki, Tamio, 4,609,024, Cl. 152-527.000.

Brieger, Emmet F.: *See—*
Colle, Edward A., Jr.; Yates, Donald N., Jr.; and Brieger, Emmet F., 4,609,056, Cl. 175-4.000.

Briles, Franklin S. Corrosion resistant dual tapered head fastener and panel composite. 4,609,315, Cl. 411-43.000.

Brissot, Louis: *See—*
Berger, Jean L.; and Brissot, Louis, 4,609,825, Cl. 250-578.000.

Bristol Composite Materials Engineering Limited: *See—*
Dunbavand, Ian E., 4,608,717, Cl. 2-2.500.

British Petroleum Company P.L.C., The: *See—*
Griggs, Colin G.; and Middleton, Anthony R., 4,609,763, Cl. 568-342.000.

British Telecommunications: *See—*
Carr, Michael D.; Morrison, David G.; and Nicol, Richard C., 4,609,941, Cl. 358-136.000.

Britton, Ralph A.: *See—*
Ruhmann, Douglas C.; Britton, Ralph A.; Mundloch, James D.; and Vorwerk, Frederick E., 4,608,931, Cl. 105-248.000.

Broadus, Ronnie J.; Slade, Randall; and Wegner, John W., to Broadus, Ronnie J. Inflatable safety bladder. 4,609,042, Cl. 166-187.000.

Broer, Dirk J.: *See—*
Kruishoop, Johan C. W.; Legierse, Petrus E. J.; Van Ruler, Johannes; and Broer, Dirk J., 4,609,437, Cl. 204-28.000.

Brokenshire, Douglas B. Gravity actuated locking garment hanger. 4,609,132, Cl. 223-96.000.

Bronoel, Guy: *See—*
Percheron nee Guegan, Annick; Achard, Jean-Claude; Bronoel, Guy; and Sarradin, Joel, 4,609,599, Cl. 429-218.000.

Brooks, Gordon L.: *See—*
Frisby, Thomas M.; and Brooks, Gordon L., 4,608,891, Cl. 83-56.000.

Brooks Rand Ltd.: *See—*
Brucato, Albert, 4,609,432, Cl. 162-141.000.

Brosilow, Coleman B.: *See—*
Adler, Robert J.; Brosilow, Coleman B.; Brown, William R.; and Gardner, Nelson C., 4,609,388, Cl. 62-12.000.

Brossy, Pierre: *See —*
Pichard, Marcel; and Brossy, Pierre, 4,609,519, Cl. 264-510.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Hattori, Shigenori; and Kinoshita, Naohisa, 4,609,299, Cl. 400-229.000.
Shioda, Junji, 4,609,298, Cl. 400-208.000.

Brouwer, Marius S.; and Grosscurt, Arnoldus C., to Duphar International Research B.V. Benzoylurea compounds, and pesticidal and pharmaceutical compositions comprising same. 4,609,676, Cl. 514-594.000.

Brown, Allan P.; and Charlebois, Leonard J., to Northern Telecom Limited. Seal assembly. 4,609,773, Cl. 174-92.000.

Brown, David C., to Cordis Corporation. External blood parameter diagnostic system. 4,608,996, Cl. 128-760.000.

Brown, Leland T., to Motorola, Inc. Solid state signal insertion circuit and method for use in a telephony system or the like. 4,609,782, Cl. 179-18.0HB.

Brown, Russell A. System using computed tomography as for selective body treatment. 4,608,977, Cl. 128-303.00B.

Brown, Thomas R.: *See—*
Baker, Joe L.; and Brown, Thomas R., 4,609,216, Cl. 292-262.000.

Brown, William R.: *See—*
Adler, Robert J.; Brosilow, Coleman B.; Brown, William R.; and Gardner, Nelson C., 4,609,388, Cl. 62-12.000.

Brown & Williamson Tobacco Corporation: *See—*
Johnson, Robert R., 4,608,999, Cl. 131-336.000.

Brucato, Albert, to Brooks Rand Ltd. Method of making paper having improved tearing strength. 4,609,432, Cl. 162-141.000.

Brugman, Johannes A. H., to Hunter Douglas International N.V. Bending apparatus. 4,608,849, Cl. 72-217.000.

Brumfield, Michael. Safety jump suit uniform and lifting mechanism for miners and other workers. 4,608,716, Cl. 2-2.500.

Buck, Alfred; and Kuhn, Falk, to Memminger GmbH. Knitting machine having a needle bed. 4,608,841, Cl. 66-104.000.

Budzinski, Walter J.: *See—*
Turner, Larry G.; Stanish, Leo S.; Kuttruff, Manfred; Budzinski, Walter J.; and MacDonald, Robert, 4,609,177, Cl. 251-175.000.

Bulin, Dennis G. Remote weight release for a bouyancy control device. 4,608,940, Cl. 114-315.000.

Bull, Stephen M.: *See—*
Neugen, Dink; Bull, Stephen M.; and Ferramola, Gabriel D., 4,609,003, Cl. 137-2.000.

Buonomo, Franco: *See—*
Neri, Carlo; and Buonomo, Franco, 4,609,765, Cl. 568-430.000.

Burgess & Associates Mfg., Inc.: *See—*
Burgess, Harry L., 4,609,385, Cl. 55-193.000.

Burgess, Harry L., to Burgess & Associates Mfg., Inc. Multi stage water deoxygenator. 4,609,385, Cl. 55-193.000.

Burke, Francis P.: *See—*
Yoon, Heeyoung; and Burke, Francis P., 4,609,536, Cl. 423-244.000.

Burke Industries, Inc.: *See—*
Gerber, Dennis H., 4,608,792, Cl. 52-199.000.

Burkhardt, Rudolf; Hass, Hansjurgen; Hanisch, Horst; and Vogel, Gunter, to Dynamit Nobel Aktiengesellschaft. Gel-forming mixture based on an alkali silicate and a trialkoxysilane. 4,609,487, Cl. 252-315.500.

Burkman, Don C., to FSI Corporation. Method of apparatus for applying chemicals to substrates in an acid processing system. 4,609,575, Cl. 427-426.000.

Burley, George J.: *See—*
Still, Donald O.; Hovance, Hubert T.; and Burley, George J., 4,608,890, Cl. 83-49.000.

Burns, Jeffery T.: *See—*
Fisher, William C.; and Burns, Jeffery T., 4,609,180, Cl. 254-134.30R.
Fisher, William C.; and Burns, Jeffery T., 4,609,181, Cl. 254-134.3FT.

Burroughs Corporation: *See—*
Gal, Laszlo V., 4,609,834, Cl. 307-443.000.

Burroughs Wellcome Co.: *See—*
Krenitsky, Thomas A., 4,609,662, Cl. 514-262.000.

Burton, Willie C., to Dow Chemical Company, The. Phenothiazinium perhalide crosslinking agent for polymer containing plurality of secondary amine moieties. 4,609,713, Cl. 525-417.000.

Buscher, John H.; and Hoffman, Michael E., to Eastman Machine Company. Electrical connector. 4,609,244, Cl. 339-32.00M.

Butler Manufacturing Company: *See—*
McClure, Richard R., 4,608,791, Cl. 52-90.000.

Butler, William D., Jr.: *See—*
Fahey, Daniel T.; Butler, William D., Jr.; and Kauffman, Jack, 4,609,330, Cl. 417-288.000.

Butnyakov, Alexandr I.: *See—*
Shostak, Valentin M.; Tolochko, Alexei I.; Volkov, Vasily P.; Maradudin, Georgy I.; Schekin, Nikolai G.; Popov, Mikhail I.; Shepelev, Dmitry N.; Matveev, Anatoly I.; Butnyakov, Alexandr I.; and Rzhavichev, Anatoly P., 4,610,016, Cl. 373-137.000.

Byers, Jim D.: *See—*
Banasiak, Dennis S.; Mozdzen, Edward C.; and Byers, Jim D., 4,609,498, Cl. 260-410.90R.

C. H. Boehringer Sohn: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, 4,609,672, Cl. 514-522.000.

Cadillac Rubber & Plastics, Inc.: *See—*
Yost, Wayne R.; and Tipton, Lynn, 4,608,793, Cl. 52-235.000.

Cahill, Richard F., to McDonnell Douglas Corporation. Passive homodyne demodulator and sensor system. 4,609,290, Cl. 356-345.000.

Cain, Steve B. Active removable orthodontic appliance and method of straightening teeth. 4,609,349, Cl. 433-6.000.

Calderon, Albert. Method of processing coal gas. 4,609,541, Cl. 423-569.000.

Calmac Manufacturing Corporation: *See—*
MacCracken, Calvin D.; MacCracken, Mark M.; and Silvetti, Brian M., 4,608,836, Cl. 62-325.000.

Calpine Containers, Inc.: *See—*
Simms, Stanton E., 4,609,116, Cl. 217-12.00R.

Camco Inc.: *See—*
Ng, W. S. Dominic, 4,608,962, Cl. 126-211.000.

Cameco Industries, Inc.: *See—*
Rodrigue, Kenneth J.; and Worlow, Joe G., 4,609,318, Cl. 414-132.000.

Campbell, James R., to Mahoney, Thomas P.; Ruston, Donald A.; and Barnes, Robert S., part interest to each. Apparatus for fabricating honeycomb core strip. 4,608,845, Cl. 72-44.000.

Campisi, Carl; and Schmid, Richard G., to Zenith Electronics Corporation. Component delivery system. 4,609,319, Cl. 414-224.000.

Canadian Department of National Defence: *See—*
Cornish, William D., 4,609,893, Cl. 333-218.000.

Canadian Patents and Development Limited: *See—*
Bourne, Orson L.; and Alcock, A. John, 4,609,876, Cl. 330-4.300.

Canavesi, Roberto; Ligorati, Ferdinando; and Ghezzi, Roberto, to Enichem Sintesi S.p.A. Method for the regeneration of ammoxidation catalysts. 4,609,635, Cl. 502-26.000.

Cannon Mills Company: *See—*
Ball, Gregory A.; Moore, Byron E.; Haynes, John D.; and Moser, James N., 4,608,936, Cl. 112-121.120.

CanOcean Resources, Ltd.: *See—*
Suchy, Les, 4,608,976, Cl. 128-204.260.

Canon Kabushiki Kaisha: *See—*
Inamoto, Tadayoshi; Yokota, Masami; and Sugitani, Hiroshi, 4,609,427, Cl. 156-633.000.
Iwashita, Tomonori; and Aihara, Yoshihiko, 4,609,274, Cl. 354-400.000.
Kawai, Tohru, 4,609,260, Cl. 350-430.000.
Kimura, Hiroyuki; Yazaki, Mutsunobu; and Yamada, Tateo, 4,609,163, Cl. 242-71.000.
Kohayakawa, Yoshimi, 4,609,287, Cl. 356-124.000.
Matsuyama, Shigeru, 4,609,997, Cl. 364-900.000.
Mitzutani, Morikazu, 4,609,276, Cl. 355-3.00R.
Nakaoka, Masaki; Komatsu, Teruo; and Goto, Shinji, 4,609,251, Cl. 350-6.800.
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,609,604, Cl. 430-57.000.
Shirai, Shigeru; Kanbe, Junichiro; and Fukuda, Tadaji, 4,609,601, Cl. 430-31.000.
Takagi, Seiichi; and Hyosu, Yoshihiko, 4,609,607, Cl. 430-106.600.
Takahashi, Toshiaki, 4,609,291, Cl. 356-418.000.
Watanabe, Yoshiaki, 4,609,271, Cl. 354-202.000.
Yokota, Hideo; Kato, Masatake; and Nishimura, Tetsuharu, 4,609,272, Cl. 354-225.000.
Yoshida, Tadashi, 4,609,927, Cl. 346-154.000.

Caplan, Arnold; and Syftestad, Glenn T. Process of and material for stimulating growth of cartilage and bony tissue at anatomical sites. 4,609,551, Cl. 424-95.000.

Caracteres S.A.: *See—*
Bauer, Eric; and Moulin, Blaise, 4,609,296, Cl. 400-175.000.

Card, Joseph L.: *See—*
Card, Roy T.; and Card, Joseph L., 4,608,934, Cl. 112-80.600.

Card, Roy T.; and Card, Joseph L. Knife holder assembly for a cut pile tufting machine and process of assembling the same. 4,608,934, Cl. 112-80.600.

Cardis, Donald R.: *See—*
Kyle, Robert L.; and Cardis, Donald R., 4,609,514, Cl. 264-153.000.

Cargile, William P., to Gordian Systems, Inc. Solid state key for controlling access to computer software. 4,609,777, Cl. 178-22.080.

Caridi, Theodore M.: *See—*
Shimrock, Thomas; Rosynsky, Victor; Caridi, Theodore M.; Collins, John M.; and Koubek, Michael G., 4,609,563, Cl. 427-8.000.

Carl Schmale GmbH & Co. KG: *See—*
Freermann, Johannes, 4,609,182, Cl. 254-228.000.

Carlini, Filippo M.: *See—*
Marraccini, Antonio; Carlini, Filippo M.; Pasquale, Antonio; and Maranzana, Giorgio, 4,609,404, Cl. 106-288.00Q.

Carlson, Franklin J. Manhole seal construction. 4,608,787, Cl. 52-20.000.

Carlson, Richard J.; and Kemeny, George A., to Westinghouse Electric Corp. Electromagnetic launchers with improved rail configurations. 4,608,908, Cl. 89-8.000.

Carlson, Willard E.: *See—*
Grose, Reginald E.; and Carlson, Willard E., 4,609,431, Cl. 162-135.000.

Carmen, Raleigh A.; Chong, Chiyong; and Leng, Barry, to Miles Laboratories, Inc. Heat sterilizable storage solution for red blood cells. 4,609,372, Cl. 604-262.000.

Carol Block Limited: *See—*
Rohr, Carol B., 4,608,978, Cl. 128-303.100.

Carr, Michael D.; Morrison, David G.; and Nicol, Richard C., to British Telecommunications. Television signal standards conversion. 4,609,941, Cl. 358-136.000.

Carr, Paul H.; and Silva, Jose H., to United States of America, Air Force. Temperature compensated berlinite for surface acoustic wave devices. 4,609,843, Cl. 310-313.00A.

Carr, Richard V. C., to Air Products and Chemicals, Inc. Process for preparing amino-2, 4-dinitroaromatic herbicides. 4,609,759, Cl. 564-395.000.

Cartwright, Richard V., to Hercules Incorporated. Enhancement of emulsification rate using combined surfactant composition. 4,609,415, Cl. 149-2.000.

Case, W. Alan: *See—*
Kirshenbaum, Gerald S.; Goldin, Michael; and Case, W. Alan, 4,609,721, Cl. 528-285.000.

Case Western Reserve University: *See—*
Crish, Timothy J.; Sweeney, James D.; and Mortimer, J. Thomas, 4,608,985, Cl. 128-419.00R.

Cason, Gary D.; Dobson, John E.; Gunter, Francis P.; Mitrovich, Svetislav; and Paranjpe, Suresh C., to Mead Corporation, The. Sheet flattening method. 4,609,517, Cl. 264-291.000.

Castolin S.A.: *See—*
Simm, Wolfgang; and Steine, Hans-Theo, 4,609,401, Cl. 75-252.000.

Caterpillar Industrial Inc.: *See—*
Paine, John C., 4,609,904, Cl. 340-52.00R.

Caterpillar Tractor Co.: *See—*
Quant, Wilton E., 4,609,322, Cl. 414-685.000.

Caumont, Jean P.: *See—*
Schawann, Jean C.; Caumont, Jean P.; and Falcimaigne, Jean, 4,609,046, Cl. 166-341.000.

Cautereels, Victor J. J.: *See—*
Daenen, Robert H. C. M.; and Cautereels, Victor J. J., 4,609,237, Cl. 312-351.000.

Cavanagh, Peter R., to Puma-Sportschuhfabriken Rudolf Dassler KG. Athletic shoe having a shock-absorbing running sole and a process for manufacturing said athletic shoe. 4,608,768, Cl. 36-28.000.

Celanese Corporation: *See—*
Kirshenbaum, Gerald S.; Goldin, Michael; and Case, W. Alan, 4,609,721, Cl. 528-285.000.

Central Glass Company, Limited: *See—*
Koishi, Toshio; Ishihara, Akira; Fuchigami, Takamasa; and Ojima, Iwao, 4,609,715, Cl. 526-245.000.

Central Sprinkler Corporation: *See—*
Pieczykolan, George S., 4,609,047, Cl. 169-38.000.

Centre de Recherches Metallurgiques: *See—*
Skenazi, Andre ; Coutsouradis, Dimitri; and Rasquin, Andre , 4,609,529, Cl. 420-516.000.

Certipak Corporation: *See—*
Collura, Peter C.; Humphries, Richard L.; and Lever, John K., 4,609,143, Cl. 229-40.000.

Ceskoslovenska Akademi Ved: *See—*
Wichterle, Otto; and Wichterle, Ivan, 4,609,507, Cl. 264-1.100.

Ceskoslovenska Akademie Ved: *See—*
Wichterle, Otto; and Havlin, Vladimir, 4,609,337, Cl. 425-145.000.

Challen, Michael P.: *See—*
Elliott, Timothy J.; and Challen, Michael P., 4,608,775, Cl. 47-1.00R.

Champion International Corporation: *See—*
Kessler, Robert G., 4,608,924, Cl. 101-170.000.

Champollion Incorporated: *See—*
Blum, Eric; and Pierce, Wilbur, 4,610,025, Cl. 382-9.000.

Chan, Yiu-Fai: *See—*
Hartmann, Robert F.; Chan, Yiu-Fai; Frankovich, Robert; and Ou, Jung-Hsing, 4,609,986, Cl. 364-200.000.

Chandler Evans Inc: *See—*
Gahura, Andrew; and Platt, Graham M., 4,608,880, Cl. 74-479.000.

Chandler Evans Inc.: *See—*
White, Albert H.; Peck, Robert E.; Meyer, Gene A.; and Devanney, Raymond H., 4,608,820, Cl. 60-39.281.

Chaney, Earl J.: *See—*
Tucholski, Gary R.; and Chaney, Earl J., 4,609,598, Cl. 429-174.000.

Chang, Keh-Minn; Huang, Shyh-Chin; and Taub, Alan I., to General Electric Company. Tri-nickel aluminide compositions ductile at hot-short temperatures. 4,609,528, Cl. 419-62.000.

Chapman, John A.; Johnson, Thomas M.; and Newbold, Donald L., to Valmont Industries, Inc. Water delivery machine for an irrigation system. 4,609,147, Cl. 239-183.000.

Charlebois, Leonard J.: *See—*
Brown, Allan P.; and Charlebois, Leonard J., 4,609,773, Cl. 174-92.000.

Charrier, Michael G.; and Smith, Peter G., to General Electric Company. Stall detector. 4,608,860, Cl. 73-115.000.

Chatlos, Richard, to Air-O-Scoop Corporation. Attachment for motor vehicles with rear windows. 4,608,915, Cl. 98-2.120.

Chattha, Mohinder S., to Ford Motor Company. Hydroxyl terminated azomethines and high glass transition temperature polyether products produced therefrom. 4,609,719, Cl. 528-98.000.

Chau, Hua T.: *See—*
Bosnyak, Robert J.; Chau, Hua T.; Goddard, Donald; and Wong, Sing, 4,609,998, Cl. 365-96.000.

Chemische Fabrik Budenheim, Rudolf A. Oetker: *See—*
Zboralski, Ullrich; and Dorn, Karlheinz, 4,609,553, Cl. 426-36.000.

Chemische Werke Huls AG: *See—*
Rigler, Josef K.; Reese, Dirk; and Leithauser, Horst, 4,609,512, Cl. 264-53.000.

Chen, Sun-Lin: *See—*
Greene, Bettye W.; and Chen, Sun-Lin, 4,609,434, Cl. 162-168.1CC.
Chen, Ying-Ho: *See—*
Lunsford, Carl D.; and Chen, Ying-Ho, 4,609,735, Cl. 546-302.000.
Chern, Shinn I.; and Jwo, Yih K. Screw jack. 4,609,179, Cl. 254-102.000.
Chevillard, Paul F.; Tritton, Victor R.; and Tritton, Gary E., to Les Enterprises Tritton LTEE. Plastic seal. 4,609,218, Cl. 292-320.000.
Chevron Research Company: *See—*
Wollenberg, Robert H., 4,609,378, Cl. 44-57.000.
Chiba, Shu; and Sawazaki, Norikazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetic head apparatus with variable inductance. 4,609,950, Cl. 360-29.000.
Chien, Frank: *See—*
Koh, Yun Bai; Chien, Frank; and Vora, Madhu, 4,609,568, Cl. 427-85.000.
Chilko, Robert J.: *See—*
Hornack, Thomas R.; and Chilko, Robert J., 4,609,249, Cl. 339-263.00E.
Chisso Corporation: *See—*
Kitano, Kisei; Ogawa, Tetsuya; Goto, Yasuyuki; and Yoshida, Naoyuki, 4,609,485, Cl. 252-299.610.
Kunimune, Kouichi; and Konotsune, Shiro, 4,609,700, Cl. 524-104.000.
Chong, Chiyong: *See—*
Carmen, Raleigh A.; Chong, Chiyong; and Leng, Barry, 4,609,372, Cl. 604-262.000.
Christel, Werner: *See—*
Itzinger, Hermann; and Christel, Werner, 4,609,082, Cl. 188-315.000.
Chung, Koo-Heung; Davis, Gary L.; and Verhoff, Francis H., to Miles Laboratories, Inc. Method of biopolymeric sludge dewatering. 4,609,470, Cl. 210-725.000.
Chylinski, Henryk J., to Gillette Company, The. Method and apparatus for sharpening razor blades. 4,608,782, Cl. 51-80.00B.
Ciba Geigy AG: *See—*
Postle, Stephen R.; and Long, William E., 4,609,620, Cl. 430-554.000.
Rohr, Thomas-Markus; and Kuhn, Jakob, 4,609,609, Cl. 430-146.000.
Ciba Geigy Corporation: *See—*
Berner, Godwin; and Manse, Aloysius H., 4,609,612, Cl. 430-281.000.
Boyer, Stephen K.; Gelotte, Karl O.; and Bach, Joseph, 4,609,733, Cl. 546-273.000.
Darms, Roland; Kvita, Vratislav; and Monnier, Charles E., 4,609,741, Cl. 549-241.000.
Dittrich, Volker, 4,609,649, Cl. 514-147.000.
Karrer, Friedrich; and Rody, Jean, 4,609,698, Cl. 524-99.000.
Mockli, Peter, 4,609,738, Cl. 548-217.000.
Cipher Data Products, Inc.: *See—*
Irvin, Ronald D.; Offerman, Karl B.; and Jacobs, Lynn C., 4,609,958, Cl. 360-106.000.
Circuit Research Labs, Inc.: *See—*
Rodgers, Robert L., 4,609,878, Cl. 330-136.000.
Cirrito, Anthony J., to CTP Partners. Method and apparatus for total energy systems. 4,609,328, Cl. 417-55.000.
Citizen Watch Co., Ltd.: *See—*
Oguchi, Toshiaki, 4,609,894, Cl. 334-11.000.
Claessen, Albertus M. G.; and van Bokhorst, Hendrik, to NCR Corporation. Control circuit for an adaptive hybrid control in a local area network. 4,610,010, Cl. 370-32.000.
Claisse, Fernand, to Gestion Financiere Duberger Inc. Sample preparation machine. 4,609,392, Cl. 65-134.000.
Claremon, David A.: *See—*
Baldwin, John J.; Claremon, David A.; and McClure, David E., 4,609,494, Cl. 260-243.300.
Clarion Co., Ltd.: *See—*
Mori, Masaharu, 4,610,031, Cl. 455-263.000.
Clark, Donald E.; and Grant, Norman H., to American Home Products Corporation. Inhibitor of mammalian collagenase and elastase. 4,609,667, Cl. 514-367.000.
Clark Equipment Company: *See—*
Redzinski, Gilbert E., 4,608,873, Cl. 74-866.000.
Clark, K. Warren: *See—*
Morris, William M.; Witzel, Frank; Puglia, Wayne J.; Mackay, Donald A. M.; Clark, K. Warren; and Patanasinth, Kanit J., 4,609,543, Cl. 424-38.000.
Clark, Keith S., to Azcorp Technology. Electronic secure entry system, apparatus and method. 4,609,780, Cl. 179-2.00A.
Clark, Michael T.; Munro, David; and Gilmore, Ian J., to Shell Oil Company. Phenyl benzothiadiazole ether herbicides. 4,609,394, Cl. 71-90.000.
Clegg, Gwendolyn M. Phonetic language translation method. 4,609,357, Cl. 434-167.000.
Clegg, John E. Prismatic enlarger-reducer. 4,609,250, Cl. 350-6.400.
Clegg, John E. Multiple prism. 4,609,254, Cl. 350-286.000.
Clegg, John E. Conical microscopic lens. 4,609,261, Cl. 350-432.000.
Clerissi, Roland: *See—*
Bedos, Thierry; Clerissi, Roland; Vallee, Jacques; and Nguyen Xuan, Kiet, 4,609,916, Cl. 340-703.000.
Cloutier, Robert P.: *See—*
Bolton, Richard H.; and Cloutier, Robert P., 4,609,954, Cl. 360-78.000.
CNG Research Company: *See—*
Adler, Robert J.; Brosilow, Coleman B.; Brown, William R.; and Gardner, Nelson C., 4,609,388, Cl. 62-12.000.
Coady, Clive J.: *See—*
Bishop, Timothy E.; Coady, Clive J.; and Zimmerman, John M., 4,609,718, Cl. 528-49.000.
Codispoti, Thomas E.: *See—*
Stevenson, James F.; Codispoti, Thomas E.; Griffith, Richard M.; and Hutch, Harry L., 4,609,336, Cl. 425-135.000.
Coffey, Gerald P.; Curatolo, Benedict S.; and Sanitra, Robert, to Standard Oil Company, The. Process for preparing substantially linear polyamide from N-alkylamide-substituted amine and aqueous ammonia. 4,609,722, Cl. 528-315.000.
Cogar, George R.; and Markle, Robert E., to Permanent Images, Inc. Permanent reproductions and formation method therefor. 4,609,613, Cl. 430-320.000.
Coggins, James P. Chair table. 4,609,224, Cl. 297-188.000.
Cogliano, Joseph A., to W. R. Grace & Co. Asphalt foam. 4,609,695, Cl. 524-59.000.
Cohen, Donald K., to International Business Machines Corporation. Optical systems employing ovate light beams. 4,609,813, Cl. 250-201.000.
Cohen, Theodore; and Bhupathy, Mahadevan, to University of Pittsburgh. Method for brevicomin synthesis and use in beetle control. 4,609,743, Cl. 549-397.000.
Coin Acceptors, Inc.: *See—*
Levasseur, Joseph L., 4,609,792, Cl. 200-5.00A.
Cole, William M.: *See—*
Elefritz, Robert A.; Cole, William M.; and Johnson, Charles R., 4,609,724, Cl. 528-399.000.
Colgate Palmolive Company: *See—*
Ramachandran, Pallassana N.; Schramm, Charles J., Jr.; Lazecky, H. Peter; and Reinish, Martin D., 4,609,473, Cl. 252-8.600.
Colle, Edward A., Jr.; Yates, Donald N., Jr.; and Brieger, Emmet F., to Halliburton Company. Sidewall core gun. 4,609,056, Cl. 175-4.000.
Collins, Gregory P., to Mobil Oil Corporation. Method of plasma treating a polymer film to change its properties. 4,609,445, Cl. 204-165.000.
Collins, John M.: *See—*
Shimrock, Thomas; Rosynsky, Victor; Caridi, Theodore M.; Collins, John M.; and Koubek, Michael G., 4,609,563, Cl. 427-8.000.
Collins, Marcus H.; and Petkash, Robert P., to Eaton Corporation. Spring engaged fluid released multi-disc brake assembly. 4,609,076, Cl. 188-71.500.
Collins, William R.: *See—*
Edelman, Robert; and Collins, William R., 4,609,569, Cl. 427-93.000.
Collura, Peter C.; Humphries, Richard L.; and Lever, John K., to Certipak Corporation. Combined lock structure for article carrier. 4,609,143, Cl. 229-40.000.
Colman, Michael E.; and Goeller, Robert E., to General Electric Company. Gas turbine engine component cooling system. 4,608,819, Cl. 60-39.830.
Colpaert, James J.: *See—*
Bach, Lloyd G.; and Colpaert, James J., 4,609,078, Cl. 188-73.430.
Colt Industries Operating Corp.: *See—*
Hale, John D.; and Stott, Herbert L., 4,609,062, Cl. 177-256.000.
Columbia Chase Corporation: *See—*
Grolitzer, Kathy B., 4,609,772, Cl. 136-254.000.
Colvin, David S. Adjustable socket including rotatable adjuster. 4,608,887, Cl. 81-128.000.
COM Sports, Inc.: *See—*
Murdock, Wilbert, 4,608,998, Cl. 128-782.000.
Combustion Engineering, Inc.: *See—*
Pettyjohn, William H., 4,609,311, Cl. 408-79.000.
Commissariat a l'Energie Atomique: *See—*
Abbes, Claude; Rouaud, Christian; Valla, Jean; de Villepoix, Raymond; Demay, Robert; and Forges, Robert, 4,609,211, Cl. 285-325.000.
Perrier de la Bathie, Rene; and Terrier, Jacques, 4,610,017, Cl. 373-156.000.
Communications Satellite Corporation: *See—*
Horna, Otakar A., 4,609,787, Cl. 179-170.200.
Communications Technology Corporation: *See—*
Ray, Jimmy C.; and Mathews, H. Wayne, 4,609,789, Cl. 179-175.20D.
Compagnie Clayton: *See—*
Thieux, Jean, 4,609,157, Cl. 241-243.000.
Compagnie d'Electronique et de Piezo-Electricite C.E.P.E.: *See—*
Renoult, Patrick, 4,609,885, Cl. 331-158.000.
Compagnie Francaise des Petroles: *See—*
Bonjour, Eric L.; and Rocaboy, Alain J., 4,609,214, Cl. 285-47.000.
Compagnie Generale de Geophysique: *See—*
Layotte, Pierre-Claude; Laurent, Jean; and James, Andre , 4,609,066, Cl. 181-121.000.
Confalonieri, Pierangelo: *See—*
Nicollini, Germano; Senderowicz, Daniel; and Confalonieri, Pierangelo, 4,609,877, Cl. 330-9.000.
Congoleum Corporation: *See—*
Grose, Reginald E.; and Carlson, Willard E., 4,609,431, Cl. 162-135.000.
Connell, G. A. Neville, to Xerox Corporation. Writing, erasing and readout system for a magneto-optic recording medium. 4,610,009, Cl. 369-110.000.

Conner, Alfred W.; and Anderson, J. Reid, to Verbatim Corporation. Spindle aperture reinforcement for a floppy disk. 4,609,963, Cl. 360-133.000.

Conoco Inc.: *See*—
Yoon, Heeyoung; and Burke, Francis P., 4,609,536, Cl. 423-244.000.

Conover, Lynn. Leg-supported umbrella holder. 4,609,175, Cl. 248-519.000.

Continental Conveyor and Equipment Company, Inc.: *See*—
Dos Santos, Joseph A., 4,609,097, Cl. 198-628.000.
Pentith, Gerald R. O., 4,609,099, Cl. 198-833.000.

Continental Pet Technologies, Inc.: *See*—
Krishnakumar, Suppayan M.; and Nahill, Thomas E., 4,609,516, Cl. 264-255.000.

Conway, Hugh T., to Becton, Dickinson and Company. Blood collection assembly. 4,608,997, Cl. 128-763.000.

Cook, Ronald L., to Texaco Inc. Means and method for the electrochemical reduction of a nitroaromatic to provide a dye. 4,609,439, Cl. 204-74.000.

Cooper Industries, Inc.: *See*—
Kristofek, Paul, 4,609,979, Cl. 362-427.000.

Cooper, Marcus F. Aircraft takeoff and abort instrument. 4,608,863, Cl. 73-178.00T.

Copal Company Limited: *See*—
Ishiguro, Yasuo, 4,609,275, Cl. 354-435.000.

Cope, Charles S., to Du Pont de Nemours, E. I., and Company. Process for separating surfactants used in the manufacture of concentrated fluoropolymer dispersions. 4,609,497, Cl. 260-408.000.

Copeland Corporation: *See*—
Muir, Earl B.; Griffith, Russell W.; and Lilienthal, Gerald W., 4,609,334, Cl. 418-55.000.

Cordis Corporation: *See*—
Beranek, William J.; and Saulson, Stanley H., 4,608,986, Cl. 128-786.000.
Brown, David C., 4,608,996, Cl. 128-760.000.

Corneille, Gilbert: *See*—
Panoz, Donald E.; and Corneille, Gilbert, 4,609,542, Cl. 424-19.000.

Cornish, William D., to Canadian Department of National Defence. Non-resonant microwave frequency halver. 4,609,893, Cl. 333-218.000.

Corno, Maria L.: *See*—
Doria, Gianfederico; Passarotti, Carlo; and Corno, Maria L., 4,609,660, Cl. 514-258.000.

Coronet Paper Corporation: *See*—
Sobel, Alvin A., 4,609,964, Cl. 360-135.000.

Corzine, Robert G.; and Mosko, Joseph A., to United States of America, Navy. Direction finding antenna interface. 4,609,888, Cl. 333-34.000.

Costantino, Umberto: *See*—
Alberti, Giulio; Bartoli, Francesco; Costantino, Umberto; and Di Gregorio, Francesco, 4,609,484, Cl. 252-184.000.

Couleau, Robert; and Guicquero, Jean P., to Societe Anonyme Chryso. Release composition for hydraulic bonding materials, method for facilitating unmolding of hydraulic bonding materials from molds, and method for casting molded pre-formed articles of hydraulic bonding materials. 4,609,570, Cl. 427-135.000.

Coulon, Andre , to Alsthom-Atlantique. Percussion apparatus. 4,608,853, Cl. 72-434.000.

Coulter Electronics, Inc.: *See*—
Coulter, Wallace H.; and Rothermel, William F., 4,609,017, Cl. 141-1.000.

Coulter, Wallace H.; and Rothermel, William F., to Coulter Electronics, Inc. Method and apparatus for transporting carriers of sealed sample tubes and mixing the samples. 4,609,017, Cl. 141-1.000.

Coutsouradis, Dimitri: *See*—
Skenazi, Andre ; Coutsouradis, Dimitri; and Rasquin, Andre , 4,609,529, Cl. 420-516.000.

Cowher, Melvyn E.: *See*—
Shuskus, Alexander J.; and Cowher, Melvyn E., 4,609,424, Cl. 156-613.000.

Cox, Percy T.; Meador, Richard A.; Riedesel, Roland G., Jr.; and Savage, Kerry D., to Texaco Inc. Dielectric well logging system with at least three transmitter coils and at least two receiver coils for determining resistivity and dielectric constant of a subsurface formation adjacent a fluid invaded zone of the formation. 4,609,873, Cl. 324-338.000.

CPC International Inc.: *See*—
Strecker, Leopold R., 4,609,500, Cl. 260-423.000.

Craig, Raymond C.; Panzer, Jerome; Wisotsky, Max J.; and Beltzer, Morton, to Exxon Research and Engineering Co. Anti-wear additives in alkanol fuels. 4,609,376, Cl. 44-53.000.

Cramm, Joan A., to UOP Inc. Increased strength polymer-blended membranes. 4,609,468, Cl. 210-490.000.

Crandall, Robert P., to Eastman Kodak Company. Apparatus for producing and stacking information copies. 4,609,282, Cl. 355-3.0SH.

Crawford, Cliff. Visual presentation projection apparatus. 4,609,268, Cl. 353-25.000.

Crawford, Wheeler C.: *See*—
Sung, Rodney L.; and Crawford, Wheeler C., 4,609,377, Cl. 44-56.000.

Crema, Stefano C., to BASF Corporation. Liquid foaming additives used in the stimulation of oil and gas wells. 4,609,477, Cl. 252-8.550.

Creps, Malvern L.: *See*—
Bimer, Thomas C.; Creps, Malvern L.; and Millis, Edwin G., 4,609,103, Cl. 206-328.000.

Crevling, Robert L.: *See*—
Berfield, Robert C.; and Crevling, Robert L., 4,609,387, Cl. 55-320.000.

Crish, Timothy J.; Sweeney, James D.; and Mortimer, J. Thomas, to Case Western Reserve University. Antidromic pulse generating wave form for collision blocking. 4,608,985, Cl. 128-419.00R.

Crivello, James V.; and Rice, Steven T., to General Electric Company. Polyimide molding compositions. 4,609,705, Cl. 524-779.000.

Crossley, Roger, to John Wyeth & Brother, Ltd. Anti-ulcer imidazoquinoline, indole and benzazepine derivatives. 4,609,655, Cl. 514-214.000.

Crouzet: *See*—
Gentet, Michel; and Nicolet, Andre , 4,609,957, Cl. 360-101.000.

Crowley, Thomas A. Material spreader having multiple compartments and mixer. 4,609,151, Cl. 239-656.000.

Crucible Chemical Company: *See*—
Wilson, Robert B.; Pomeroy, William F.; and Sovey, Louis T., Jr., 4,609,375, Cl. 8-506.000.

Crucible Materials Corporation: *See*—
Haswell, Walter T.; and Yolton, Charles F., 4,609,526, Cl. 419-23.000.

Crummett, Donald L.: *See*—
Walker, Jerry L.; Crummett, Donald L.; and Behling, William C., 4,609,057, Cl. 175-4.600.

Crutchfield, Marvin M.; and Hinkebein, John A., to Monsanto Company. Sheet composites containing crystalline phosphate fibers. 4,609,433, Cl. 162-145.000.

Cryogenic Consultants Limited: *See*—
Good, Jeremy A., 4,609,109, Cl. 209-636.000.

Csakvary, Tibor, to Unimation, Inc. Wire harness fabrication apparatus. 4,608,746, Cl. 29-564.400.

CTP Partners: *See*—
Cirrito, Anthony J., 4,609,328, Cl. 417-55.000.

Cuisia, Dionisio G.; and Hwa, Chih M., to W. R. Grace & Co. Scale inhibiting composition. 4,609,483, Cl. 252-180.000.

Cullick, Alvin S., to Mobil Oil Corporation. Enhanced oil recovery using carbon dioxide. 4,609,043, Cl. 166-268.000.

Curatolo, Benedict S.: *See*—
Coffey, Gerald P.; Curatolo, Benedict S.; and Sanitra, Robert, 4,609,722, Cl. 528-315.000.

Curro, John J.; Baird, James C.; Gerth, Donald L.; Vernon, George M.; and Linman, E. Kelly, to Procter & Gamble Company, The. Multiphase process for debossing and perforating a polymeric web to coincide with the image of one or more three-dimensional forming structures. 4,609,518, Cl. 264-504.000.

Cuscurida, Michael; and Waddill, Harold G., to Texaco Inc. Polyether polyols modified with amino alcohol-epoxy resin adducts. 4,609,685, Cl. 521-167.000.

Cutler, Larry P.; Guehler, Paul F.; and Insley, Thomas I., to Minnesota Mining and Manufacturing Company. Absorptive devices. 4,609,584, Cl. 428-156.000.

Daenen, Robert H. C. M.; and Cautereels, Victor J. J., to Dart Industries Inc. Dual level grid assembly for a container. 4,609,237, Cl. 312-351.000.

Daido Tokushuko Kabushiki Kaisha: *See*—
Sugiura, Sabro; Hayashi, Kiyohide; Kanada, Kenji; Demukai, Noboru; and Okamoto, Tetsuo, 4,609,538, Cl. 423-244.000.

Daikin Kogyo Co., Ltd.: *See*—
Hisamoto, Iwao; Maeda, Chiaki; and Nishiwaki, Mitsuhiro, 4,609,489, Cl. 252-355.000.

Daimler-Benz Aktiengesellschaft: *See*—
Edenhofer, Berthold, 4,609,229, Cl. 303-6.00C.

Daly, John, Jr., to Williams, John L. Double feed detection device. 4,608,856, Cl. 73-37.700.

Damm, Norbert: *See*—
Kobel, Alfons; Damm, Norbert; Geiger, Werner; and Muller, Gunter, 4,609,033, Cl. 164-169.000.

Dana Corporation: *See*—
Gray, Larry O., 4,608,954, Cl. 123-352.000.

Dananberg, Howard J. Method of treating functional hallux limitus. 4,608,988, Cl. 128-581.000.

Daniel, Richard A.: *See*—
Milby, Gregory H.; Daniel, Richard A.; and Rostek, Paul M., 4,609,829, Cl. 307-150.000.

Dainippon Ink and Chemicals, Inc.: *See*—
Esashi, Yasuyoshi; Yoneyama, Fumiaki; and Ogihara, Yoshihisa, 4,609,499, Cl. 260-414.000.

Danner, Timothy J. Electric heat exchanger. 4,609,811, Cl. 219-302.000.

Darms, Roland; Kvita, Vratislav; and Monnier, Charles E., to Ciba-Geigy Corporation. Phthalic acid derivatives which are substituted by 2-propynyloxy groups, processes for their preparation and their use. 4,609,741, Cl. 549-241.000.

Dart Industries Inc.: *See*—
Daenen, Robert H. C. M.; and Cautereels, Victor J. J., 4,609,237, Cl. 312-351.000.

Das, Jagabandhu, to E. R. Squibb & Sons, Inc. 5,6-epoxy-7-oxabicycloheptane substituted amino prostaglandin analogs useful in the treatment of thrombotic disease. 4,609,671, Cl. 514-468.000.

Datatape Incorporated: *See*—
Jacobs, John H., 4,609,961, Cl. 360-114.000.

Davern, John W., to Gemcor Engineering Corp. Jet guide rivet injector. 4,609,134, Cl. 227-112.000.

Davidson, Albert C.; and Boyle, David E., to Westinghouse Electric Corp. Mechanical drive system for moving fuel. 4,609,522, Cl. 376-212.000.

Davidson, Jeffrey; Babish, John G.; and Wedig, John H., to Olin Corporation. Use of selected pyridine-N-oxide disulfide compounds to treat or prevent swine exudative epidermitis. 4,609,665, Cl. 514-335.000.
Davis, Gary L.: *See—*
Chung, Koo-Heung; Davis, Gary L.; and Verhoff, Francis H., 4,609,470, Cl. 210-725.000.
Davis, George W.: *See—*
Nielsen, Anker J., Jr.; and Davis, George W., 4,609,217, Cl. 292-307.00B.
Davis, Larry; and Klein, Joseph T., to Hoechst-Roussel Pharmaceuticals Inc. 1-[3-(6-fluoro-1,2-benzisoxazol-3-yl)propyl]-4-(substituted) piperazines useful for reducing blood pressure. 4,609,658, Cl. 514-253.000.
Dean, Edward H.; and Doxey, Burnley R., to United States of America, Army. Helicopter cargo rack. 4,609,167, Cl. 244-137.00A.
Dean, Edward H.; Doxey, Burnley R.; Diebler, Daniel T.; and Swats, Charles F., to United States of America, Army. Removable helicopter external cargo carrying framework. 4,609,168, Cl. 244-137.00A.
De Donato, Victor. Tool for forming a scroll. 4,608,847, Cl. 72-148.000.
Deere & Company: *See—*
Heerdink, Robert J.; and Vogt, James L., 4,609,063, Cl. 180-69.230.
Steilen, Ronald M.; Myers, John R.; and Rettig, Vernon E., 4,609,203, Cl. 280-461.00A.
De Filippis, Christian, to Renault Automation. Unit for assembly of a motor vehicle body element. 4,609,137, Cl. 228-47.000.
DeGraaf, Henry J.: *See—*
Bode, Daniel; and DeGraaf, Henry J., 4,609,706, Cl. 525-7.400.
Degrange, Pierre: *See—*
Kristanek, Henri; and Degrange, Pierre, 4,609,793, Cl. 200-16.00D.
Deguchi, Hirokazu; Kojima, Kenji; and Mogami, Takao, to Seiko Epson Corporation. Synthetic resin lens and antireflection coating. 4,609,267, Cl. 351-163.000.
DeGuire, Eileen J.: *See—*
Messier, Donald R.; DeGuire, Eileen J.; and Katz, R. Nathan, 4,609,631, Cl. 501-35.000.
Degussa AG: *See—*
Leuchtenberger, Wolfgang; Hummel, Werner; Kula, Maria-Regina; and Schutte, Horst, 4,609,623, Cl. 435-130.000.
Dejaiffe, Robert: *See—*
Giordano, John J.; Shawcross, Jeffrey P.; Fuchs, Alfred E.; and Dejaiffe, Robert, 4,609,587, Cl. 428-325.000.
De Jonghe, Lutgard C.: *See—*
Hitchcock, David C.; Mailhe, Catherine C.; and De Jonghe, Lutgard C., 4,609,596, Cl. 429-104.000.
DeKoster, Heinz; Edelman, Oscar; and Magida, Nathan H., to Thermosen, Incorporated. Miniature relay. 4,609,897, Cl. 335-133.000.
Delamater, Charles E.: *See—*
Bohland, Robert J.; Delamater, Charles E.; Elseser, John W.; and Gensamer, William L., 4,608,932, Cl. 109-56.000.
Delise, Fred, to LRD, Inc. Corner moulding and fastener. 4,608,794, Cl. 52-288.000.
DeMarco, Michael, to United States of America, Navy. Non-soniferous power drive for underwater vehicles. 4,609,362, Cl. 440-75.000.
Demay, Robert: *See—*
Abbes, Claude; Rouaud, Christian; Valla, Jean; de Villepoix, Raymond; Demay, Robert; and Forges, Robert, 4,609,211, Cl. 285-325.000.
Demukai, Noboru: *See—*
Sugiura, Sabro; Hayashi, Kiyohide; Kanada, Kenji; Demukai, Noboru; and Okamoto, Tetsuo, 4,609,538, Cl. 423-244.000.
Dentsply Research & Development Corp.: *See—*
Blair, John J., 4,609,351, Cl. 433-55.000.
Dermitzakis, Stephan; Suri, Jasbeer S.; Krumrein, Gerhard; and Mischel, Peter, to Telefunken electronic GmbH. Broad-band amplifier for the amplification of a photoelectric current. 4,609,880, Cl. 330-308.000.
Deschamps, Andre ; Dezael, Claude; and Franckowiak, Sigismond, to Institut Francais du Petrole. Process for converting heavy petroleum residues to hydrogen and gaseous distillable hydrocarbons. 4,609,456, Cl. 208-112.000.
Descure, Pierre: *See—*
Berger, Jean L.; and Descure, Pierre, 4,609,823, Cl. 250-370.000.
Desfontaines, Guy: *See—*
Millot, Jean-Paul; Alibran, Patrice; Desfontaines, Guy; and Hittner, Dominique, 4,609,521, Cl. 376-173.000.
DeSoto, Inc.: *See—*
Bishop, Timothy E.; Coady, Clive J.; and Zimmerman, John M., 4,609,718, Cl. 528-49.000.
Detexomat Machinery Limited: *See—*
Hodges, Michael J., 4,609,419, Cl. 156-152.000.
Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Single side-band harmonic extension in a polyphonic tone synthesizer. 4,608,903, Cl. 84-1.010.
Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V.: *See—*
Peschka, Walter; Schneider, Gottfried; and Nieratschker, Willi, 4,608,830, Cl. 62-7.000.
Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH: *See—*
Blaseck, Klaus; and Hoffmeister, Lothar, 4,609,323, Cl. 414-663.000.
Deutsche Industrieanlagen Gesellschaft mit beschraenkter Haftung Berlin: *See—*
Roesler, Hermann, 4,609,326, Cl. 414-736.000.
Deutschlander, Gert: *See—*
Lenherr, Harald; and Deutschlander, Gert, 4,609,095, Cl. 198-460.000.
Devanney, Raymond H.: *See—*
White, Albert H.; Peck, Robert E.; Meyer, Gene A.; and Devanney, Raymond H., 4,608,820, Cl. 60-39.281.
de Villepoix, Raymond: *See—*
Abbes, Claude; Rouaud, Christian; Valla, Jean; de Villepoix, Raymond; Demay, Robert; and Forges, Robert, 4,609,211, Cl. 285-325.000.
De Young, Thomas W., to Exxon Printing Systems, Inc. Buffer reservoir for ink jet apparatus and method. 4,609,924, Cl. 346-1.100.
Dezael, Claude: *See—*
Deschamps, Andre ; Dezael, Claude; and Franckowiak, Sigismond, 4,609,456, Cl. 208-112.000.
de Zwart, Maarten: *See—*
Leenhouts, Frans; and de Zwart, Maarten, 4,609,255, Cl. 350-341.000.
Dhein, Rolf: *See—*
Meyer, Rolf-Volker; Reinking, Klaus; Idel, Karsten-Josef; and Dhein, Rolf, 4,609,699, Cl. 524-100.000.
Diebler, Daniel T.: *See—*
Dean, Edward H.; Doxey, Burnley R.; Diebler, Daniel T.; and Swats, Charles F., 4,609,168, Cl. 244-137.00A.
Diebold, Incorporated: *See—*
Bohland, Robert J.; Delamater, Charles E.; Elseser, John W.; and Gensamer, William L., 4,608,932, Cl. 109-56.000.
Di Gregorio, Francesco: *See—*
Alberti, Giulio; Bartoli, Francesco; Costantino, Umberto; and Di Gregorio, Francesco, 4,609,484, Cl. 252-184.000.
DiPiazza, James J.: *See—*
Pampalone, Thomas R.; Khan, Ahmad H.; and DiPiazza, James J., 4,609,614, Cl. 430-323.000.
Dischert, William A.: *See—*
Hedel, Rudolph H.; and Dischert, William A., 4,609,094, Cl. 198-380.000.
Dittrich, Volker, to Ciba-Geigy Corporation. Pesticidal compositions employing a synergistic combination of endosulfan and profenofos. 4,609,649, Cl. 514-147.000.
Dixon, Richard D.; and Hicks, Marvin R., to Huck Manufacturing Company. Fastening system including a pull type fastener for constructing articles such as shipping containers and the like. 4,609,317, Cl. 411-339.000.
D'Muhala, Thomas F.; and Ward, Robert C., to Nuclear Technology Corporation. Hydrazides of amino-polyacetic acids as chelants. 4,609,757, Cl. 564-151.000.
Dobson, John E.: *See—*
Cason, Gary D.; Dobson, John E.; Gunter, Francis P.; Mitrovich, Svetislav; and Paranjpe, Suresh C., 4,609,517, Cl. 264-291.000.
Dr. Johannes Heidenhain GmbH: *See—*
Miller, Walter, 4,609,819, Cl. 250-237.00G.
Voelk, Karl-Hermann; and Wehrstein, Karl-Heinz, 4,608,758, Cl. 33-125.00R.
Dr. Staiger, Mohilo & Co., GmbH: *See—*
Mayer, Eberhard; Mohilo, Oskar; and Koltermann, Jurgen, 4,608,872, Cl. 73-862.230.
Dodenhoff, John A., deceased: *See—*
LeMieux, David M.; Dodenhoff, John A., deceased; and Papitto, Ralph, executor, 4,609,774, Cl. 174-152.0GM.
Dodenhoff, Maxine S., executor: *See—*
LeMieux, David M.; Dodenhoff, John A., deceased; and Papitto, Ralph, executor, 4,609,774, Cl. 174-152.0GM.
Dodge, Robert J. Direct ray solar meter and method. 4,609,288, Cl. 356-218.000.
Dodkin, Raymond: *See—*
Twigger, Ronald T.; and Dodkin, Raymond, 4,608,899, Cl. 83-745.000.
Doehler, Joachim; and Izu, Masatsugu, to Sovonics Solar Systems. Cathode assembly with localized profiling capabilities. 4,608,943, Cl. 118-718.000.
Doiron, Gerald J., to Omark Industries, Inc. Safety chain for chain saws. 4,608,901, Cl. 83-834.000.
Dominguez, Mariano; and Artaud, Daniel, to Thomson-LGT. Frequency modulated transmitter applicable to MF broadcasting. 4,610,030, Cl. 455-113.000.
Dominguez, Richard J. G.: *See—*
Grigsby, Robert A., Jr.; and Dominguez, Richard J. G., 4,609,683, Cl. 521-159.000.
Grigsby, Robert A., Jr.; and Dominguez, Richard J. G., 4,609,684, Cl. 521-163.000.
Dominianni, Samuel J.; and Yen, Terence T., to Eli Lilly and Company. Imidazolium hypoglycemic agents. 4,609,670, Cl. 514-399.000.
Donnelly, Murray P.: *See—*
Heater, Thomas J.; and Donnelly, Murray P., 4,609,030, Cl. 164-137.000.
Doria, Gianfederico; Passarotti, Carlo; and Corno, Maria L., to Farmitalia Carlo Erba, S.p.A. Substituted carboxy-thiazolo[3,2-a]pyrimidine derivatives. 4,609,660, Cl. 514-258.000.
Dorlars, Alfons; Blank, Heinz U.; Nordt, Herbert, deceased (by Nordt, Hildegard, heiress); and Trescher, Viktor, to Bayer Aktiengesellschaft. Process for the preparation of optionally substituted cinnamic acid in the presence of a catalyst. 4,609,756, Cl. 562-495.000.
Dorn, Karlheinz: *See—*
Zboralski, Ullrich; and Dorn, Karlheinz, 4,609,553, Cl. 426-36.000.
Dorner Mfg. Corp.: *See—*
Dorner, Wolfgang C., 4,609,091, Cl. 198-347.000.

Dorner, Steven C. Shelf bracket and cooperable locking bracket retainer. 4,609,172, Cl. 248-222.100.

Dorner, Wolfgang C., to Dorner Mfg. Corp. Storage unit for a conveyor system. 4,609,091, Cl. 198-347.000.

Dornier, Peter, to Lindauer Dornier Gesellschaft mbH. Drying apparatus for tubular textile wares. 4,608,767, Cl. 34-103.000.

Dornier System GmbH: *See*—
Muller, Hans G.; and Wess, Othmar, 4,608,983, Cl. 128-328.000.

Dos Santos, Joseph A., to Continental Conveyor and Equipment Company, Inc. High angle conveyor. 4,609,097, Cl. 198-628.000.

Dotson, Robert S., Jr. Pneumatic ultrasonic surgical handpiece. 4,609,368, Cl. 604-22.000.

Doty, Verle L., to Federal Equipment Company. Loader/unloader assembly for vertical stores conveyor having unload position safety cut-off. 4,609,096, Cl. 198-464.400.

Douglas, Arthur E.: *See*—
Drinkard, Tye C.; and Douglas, Arthur E., 4,609,785, Cl. 179-146.00R.

Douma, John D.: *See*—
Bell, Jerry L.; Douma, John D.; Keinath, David P.; and Moore, Robert E., 4,608,895, Cl. 83-345.000.

Dove, Derek B.: *See*—
Aviram, Ari; and Dove, Derek B., 4,609,926, Cl. 346-76.0PH.

Dow Chemical Company, The: *See*—
Bakkum, Jacobus T. M., 4,609,436, Cl. 203-6.000.
Burton, Willie C., 4,609,713, Cl. 525-417.000.
Garner, Joseph L., 4,609,729, Cl. 536-91.300.
Greene, Bettye W.; and Chen, Sun-Lin, 4,609,434, Cl. 162-168.100.
Schols, John A.; and Yu, KeeChung, 4,609,693, Cl. 523-465.000.
Schrader, Marguerite D., 4,609,036, Cl. 165-10.000.
Solc, Jitka, 4,609,608, Cl. 430-106.600.
Wood, Clayton D.; and Gleason, Edward F., 4,609,679, Cl. 518-715.000.

Dow Corning Corporation: *See*—
Freiberg, Alan L.; Graiver, Daniel; Lim, Thomas F.; and Wright, Antony P., 4,609,486, Cl. 252-310.000.
Keryk, John R.; Lo, Peter Y. K.; and Thayer, LeRoy E., 4,609,574, Cl. 427-407.100.

Dowbenko, Rostyslaw: *See*—
Greigger, Barbara A.; and Dowbenko, Rostyslaw, 4,609,717, Cl. 528-45.000.

Dowdle, Dean M.: *See*—
Nourse, Gary E.; and Dowdle, Dean M., 4,609,911, Cl. 340-572.000.

Dowty Mining Equipment Limited: *See*—
Hill, Nigel; and Sleigh, Neville J. H., 4,609,308, Cl. 405-293.000.

Doxey, Burnley R.: *See*—
Dean, Edward H.; and Doxey, Burnley R., 4,609,167, Cl. 244-137.00A.
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Dozier, Harold W., to Thomson Components-Mostek Corporation. Microcomputer with severable ROM. 4,609,985, Cl. 364-200.000.

Drackett Company, The: *See*—
Ludwig, Clifford J., 4,609,121, Cl. 220-234.000.

Drake, Charles A., to Phillips Petroleum Company. Catalysts for dimerization and process for preparing the catalysts. 4,609,637, Cl. 502-174.000.

Dravo Corporation: *See*—
Binzen, Willard, 4,609,321, Cl. 414-291.000.

Drayyer, Johannes, to GTE Communication Systems Corporation. Controller for a multistage space switching network. 4,610,011, Cl. 370-58.000.

Dresser Industries, Inc.: *See*—
Stewart, Paul C., 4,608,743, Cl. 29-526.00R.
Utasi, Joseph G., 4,610,005, Cl. 367-33.000.

Drexler, Jerome, to Drexler Technology Corporation. Prerecorded dual strip data storage card. 4,609,812, Cl. 235-487.000.

Drexler Technology Corporation: *See*—
Drexler, Jerome, 4,609,812, Cl. 235-487.000.

Drinkard, Tye C.; and Douglas, Arthur E., to General Electric Company. Universal handset mount. 4,609,785, Cl. 179-146.00R.

Drue, Herbert R. C., to Medical Innovation Company A/S. Stand-off cell for an ultrasonic scanner head. 4,608,989, Cl. 128-660.000.

Duffy, James J., to Ford Motor Company. Speed sensitive power steering valve. 4,609,331, Cl. 417-293.000.

Dunbavand, Ian E., to Bristol Composite Materials Engineering Limited. Flexible armor. 4,608,717, Cl. 2-2.500.

Dunlap, Richard P.; and Gompf, Thomas E., to Eastman Kodak Company. Photographic products employing novel nondiffusible compounds which release photographically useful groups. 4,609,610, Cl. 430-223.000.

Dunoutier, Gerard M.: *See*—
Marck, Thierry; and Dunoutier, Gerard M., 4,608,970, Cl. 128-80.00J.

Duphar International Research B.V.: *See*—
Brouwer, Marius S.; and Grosscurt, Arnoldus C., 4,609,676, Cl. 514-594.000.
Paerels, Gerard B.; and Raven, Cornelis W., 4,609,753, Cl. 560-13.000.

Du Pont de Nemours, E. I., and Company: *See*—
Cope, Charles S., 4,609,497, Cl. 260-408.000.
Fawzi, Maged M., 4,609,396, Cl. 71-92.000.
Huybrechts, Jozef T.; and Meeus, Ferdinand F., 4,609,692, Cl. 523-439.000.
Mabry, Melinda A.; Prichard, William W.; and Ziemecki, Stanislaw B., 4,609,636, Cl. 502-183.000.
Nicholson, Michael D.; and Roy, Gerald A., Jr., 4,609,398, Cl. 71-93.000.
Pasteris, Robert J.; and Thompson, Mark E., 4,609,395, Cl. 71-90.000.
Smeltz, Kenneth C., 4,609,479, Cl. 252-8.551.
Wexler, Barry A., 4,609,397, Cl. 71-92.000.

Durckheimer, Walter; and Lattrell, Rudolf, to Hoechst Aktiengesellschaft. Crystalline cephem-acid addition salts and processes for their preparation. 4,609,653, Cl. 514-202.000.

Duschka, Hartmut: *See*—
Born, Hans-Joachim; Duschka, Hartmut; Seyler, Gerhard; and Zerl, Wolfgang, 4,609,940, Cl. 358-111.000.

Dyanmit Nobel AG: *See*—
Barfurth, Dieter; and Nestler, Heinz, 4,609,746, Cl. 556-40.000.

Dynamit Nobel AG: *See*—
Barfurth, Dieter; and Nestler, Heinz, 4,609,745, Cl. 556-40.000.
Kotzsch, Hans-Joachim; and Vahlensieck, Hans-Joachim, 4,609,749, Cl. 556-411.000.

Dynamit Nobel Aktiengesellschaft: *See*—
Burkhardt, Rudolf; Hass, Hansjurgen; Hanisch, Horst; and Vogel, Gunter, 4,609,487, Cl. 252-315.500.
Neuschaeffer, Karl H.; Spielau, Paul; Engels, Hans-Werner; and Zoche, Guenter, 4,608,795, Cl. 52-309.120.

Dynapac Maskin AB: *See*—
Grafstrom, Lars M.; Hallstedt, Lennart; and Enochsson, Per, 4,609,055, Cl. 173-162.00H.

E. R. Squibb & Sons, Inc.: *See*—
Das, Jagabandhu, 4,609,671, Cl. 514-468.000.

Eastman Kodak Company: *See*—
Bolton, Richard H.; and Cloutier, Robert P., 4,609,954, Cl. 360-78.000.
Crandall, Robert P., 4,609,282, Cl. 355-3.0SH.
Dunlap, Richard P.; and Gompf, Thomas E., 4,609,610, Cl. 430-223.000.
Noonan, John M.; Perlstein, Jerome H.; and Scozzafava, Michael, 4,609,606, Cl. 430-69.000.

Eastman Machine Company: *See*—
Buscher, John H.; and Hoffman, Michael E., 4,609,244, Cl. 339-32.00M.

Eaton Corporation: *See*—
Bopp, Warren G., 4,608,883, Cl. 74-574.000.
Collins, Marcus H.; and Petkash, Robert P., 4,609,076, Cl. 188-71.500.
Uthoff, Loren H., Jr., 4,609,335, Cl. 418-201.000.
Uzzo, Anthony P., 4,609,905, Cl. 340-58.000.

Eats, James V.; Lipstein, Norman J.; and Miller, Edward H., to General Electric Company. Baffle for improving coolant gas flow distribution in the gap region of a gas cooled dynamoelectric machine. 4,609,840, Cl. 310-58.000.

Ebara Corporation: *See*—
Nishimori, Sinji, 4,609,327, Cl. 415-121.00B.

Eberle, Jurg, to Feramatic AG. Drive apparatus containing a universal link chain. 4,609,365, Cl. 474-154.000.

Eberlein, Helmut; and Kornberger, Otto, to MERO-Raumstruktur GmbH & Co. Trussing, particularly three-dimensional trussing, made of elongated members and joint elements. 4,608,790, Cl. 52-81.000.

Echeverri, Frank J. Toy saddle adapted to be carried by an adult person. 4,608,811, Cl. 54-44.000.

Eckerle, Douglas W. Double ended throwing knife. 4,608,757, Cl. 30-299.000.

Eckhardt, Fritz; Helbig, Peter; and Schonherr, Walter, to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH. Incandescent lamp-base assembly, particularly for an automotive-type halogen incandescent lamp. 4,609,977, Cl. 362-267.000.

Economopoulos, Peter C.: *See*—
Ong, Richard H.; and Economopoulos, Peter C., 4,610,001, Cl. 365-189.000.

Edeling, Martin; Mund, Konrad; Rao, Raghavendra; and Weidlich, Erhard, to Siemens Aktiengesellschaft. Method for the manufacture of implantable electrodes of vitreous carbon. 4,609,508, Cl. 264-29.600.

Edeling, Martin; and Gebhardt, Ulrich, to Siemens Aktiengesellschaft. Method for the manufacture of porous vitreous carbon. 4,609,972, Cl. 361-433.000.

Edelman, Oscar: *See*—
DeKoster, Heinz; Edelman, Oscar; and Magida, Nathan H., 4,609,897, Cl. 335-133.000.

Edelman, Robert; and Collins, William R., to M&T Chemicals Inc. Method of preparing modified polysiloxane containing polymers. 4,609,569, Cl. 427-93.000.

Edenhofer, Berthold, to Daimler-Benz Aktiengesellschaft. Vehicle brake control system. 4,609,229, Cl. 303-6.00C.

Edstrom, Kjell: *See*—
Nilsson, Goran; Edstrom, Kjell; and Wiklund, Henry, 4,609,054, Cl. 173-118.000.

Edwards, Paul M., to Perry Manufacturing Incorporated. Collapsible scaffold. 4,609,071, Cl. 182-152.000.

Egan, Philip A., to Olin Corporation. Sulfonated alkyl glucosides and use thereof in oil recovery. 4,609,478, Cl. 252-8.55D.

Eggerer, Hermann; Hagenbruch, Bernd; Nguyen, Tran G.; Stegmeier, Karlheinz; and Pill, Johannes, to Boehringer Mannheim GmbH. Carboxylic acid derivatives, processes for the preparation thereof and pharmaceutical compositions containing them. 4,609,673, Cl. 514-542.000.

Eguchi, Yasukata, to Janome Sewing Machine Co., Ltd. Device for stabilizing stitches in a sewing machine. 4,608,937, Cl. 112-121.130.

Ehn, Borje: *See—*
Linderoth, Gustaf; and Ehn, Borje, 4,609,160, Cl. 242-54.00R.

Eilola, David: *See—*
Arbogast, Thomas P.; and Eilola, David, 4,609,913, Cl. 340-622.000.

Eisenbrand, Gerhard; and Schreiber, Joachim, to Stiftung Deutsches Krebsforshungszentrum. Steroid esters of N-(2-halogenoethyl)-N-nitroso-carbamoyl-amino acids and peptides thereof, as well as methods for preparing them. 4,609,496, Cl. 260-397.400.

EKE Robotersysteme GmbH: *See—*
Beyer, Hasso, 4,608,884, Cl. 74-665.00B.

Eklund, Gosta: *See—*
Huhtala, Esko; Laaksonen, Markku; Vaho, Matti; Karttunen, Johannes; and Eklund, Gosta, 4,610,029, Cl. 383-10.000.

Elan Corporation, P.L.C.: *See—*
Panoz, Donald E.; and Corneille, Gilbert, 4,609,542, Cl. 424-19.000.

Electro Corporation: *See—*
Metcalf, Wilbur F., 4,609,869, Cl. 324-208.000.

Elefritz, Robert A.; Cole, William M.; and Johnson, Charles R., to Firestone Tire & Rubber Company, The. Process for preparing and purifying alkoxyphosphazene polymer. 4,609,724, Cl. 528-399.000.

Elger, Walter: *See—*
Rohde, Ralph; Annen, Klaus; Neef, Gunter; Wiechert, Rudolf; Beier, Sybille; Elger, Walter; and Henderson, David, 4,609,651, Cl. 514-179.000.

Eli Lilly and Company: *See—*
Dominianni, Samuel J.; and Yen, Terence T., 4,609,670, Cl. 514-399.000.
Hirsch, Kenneth S.; Jones, Charles D.; and Taylor, Harold M., 4,609,666, Cl. 514-359.000.

Elings, Virgil B. Measuring skin perfusion. 4,608,990, Cl. 128-633.000.

Elkins, Edwin C., Sr. Pivoted gravity return fence extension for cattle guard. 4,609,184, Cl. 256-14.000.

Elle, Erich: *See—*
Sotonyi, Thomas; Webers, Heinz; and Elle, Erich, 4,609,802, Cl. 219-56.000.

Elliesen, Wolfgang, to Joh. Friedrich Behrens AG. Sound-dampened driving apparatus for fasteners. 4,609,135, Cl. 227-130.000.

Elliott, Hilton F., to Huletts Sugar Limited. Apparatus for feeding a diffuser. 4,609,405, Cl. 127-3.000.

Elliott, Timothy J.; and Challen, Michael P., to National Research Development Corporation. Mushroom mutant strains. 4,608,775, Cl. 47-1.00R.

Ellis, Larry G.; and Radi, Gabor L., to Western Gear Corporation. Rotary launcher and hydraulic ejector system. 4,608,907, Cl. 89-1.815.

Ellison, Pioneer Division: *See—*
Goodman, Robert M., Jr., 4,609,016, Cl. 139-91.000.

Elseser, John W.: *See—*
Bohland, Robert J.; Delamater, Charles E.; Elseser, John W.; and Gensamer, William L., 4,608,932, Cl. 109-56.000.

Emhart Industries, Inc.: *See—*
Shedigian, Vandos, 4,609,967, Cl. 361-315.000.
Shedigian, Vandos, 4,609,969, Cl. 361-323.000.

Endo, Kaoru: *See—*
Torii, Michihiro; Moritomo, Takao; Endo, Kaoru; and Ito, Norifumi, 4,609,956, Cl. 360-100.000.

Engelhard Corporation: *See—*
Shimrock, Thomas; Rosynsky, Victor; Caridi, Theodore M.; Collins, John M.; and Koubek, Michael G., 4,609,563, Cl. 427-8.000.

Engels, Hans-Werner: *See—*
Neuschaeffer, Karl H.; Spielau, Paul; Engels, Hans-Werner; and Zoche, Guenter, 4,608,795, Cl. 52-309.120.

ENI Ente Nazionale Idrocarburi: *See—*
Alberti, Giulio; Bartoli, Francesco; Costantino, Umberto; and Di Gregorio, Francesco, 4,609,484, Cl. 252-184.000.

Enichem Sintesi S.p.A.: *See—*
Canavesi, Roberto; Ligorati, Ferdinando; and Ghezzi, Roberto, 4,609,635, Cl. 502-26.000.

Enochsson, Per: *See—*
Grafstrom, Lars M.; Hallstedt, Lennart; and Enochsson, Per, 4,609,055, Cl. 173-162.00H.

Enomoto, Koji: *See—*
Suzuki, Kunihiko; and Enomoto, Koji, 4,609,064, Cl. 180-233.000.

Entenmanns, Inc.: *See—*
Keoteklian, Hagop, 4,609,469, Cl. 210-609.000.

Environmental Elements Corp.: *See—*
Tisone, Robert W., 4,609,009, Cl. 137-561.00A.

Epperson, Billy G.: *See—*
Badolato, Vincent G.; and Epperson, Billy G., 4,609,975, Cl. 362-125.000.

Erickson, Alan N.; and Erickson, Steve E. Educational game. 4,609,359, Cl. 434-338.000.

Erickson, Steve E.: *See—*
Erickson, Alan N.; and Erickson, Steve E., 4,609,359, Cl. 434-338.000.

Eriksson, Einar A.: *See—*
Kindinger, Peter A.; and Eriksson, Einar A., 4,609,884, Cl. 331-109.000.

Erkens, Walter, to Rhodia Aktiengesellschaft. Apparatus for the control of rotating parts in machinery. 4,609,915, Cl. 340-671.000.

ESAB North America, Incorporated: *See—*
Frisby, Thomas M.; and Brooks, Gordon L., 4,608,891, Cl. 83-56.000.

Esashi, Yasuyoshi; Yoneyama, Fumiaki; and Ogihara, Yoshihisa, to Daninippon Ink and Chemicals, Inc. Rubber-steel cord adhesion promoter. 4,609,499, Cl. 260-414.000.

Esco Corporation: *See—*
Hungerford, Emory D., 4,609,081, Cl. 188-307.000.

Ethyl Corporation: *See—*
Jones, Jesse D.; and Hornbaker, Edwin D., 4,609,701, Cl. 524-178.000.
Shin, Kju H.; and Tatum, Edward F., 4,609,767, Cl. 568-722.000.

Etoh, Takeaki: *See—*
Hata, Go; Etoh, Takeaki; Shirakawa, Toshifumi; Matsuura, Yuji; and Uchiyama, Takashi, 4,609,492, Cl. 252-522.00R.

Evans, Ben E.; and Rittle, Kenneth E., to Merck & Co., Inc. Renin-inhibitory peptide analogs. 4,609,641, Cl. 514-16.000.

Evans, Thomas L.; and Grade, Marsha M., to General Electric Company. Method for preparing monomeric and polymeric bis(dicarboxyphenyl) sulfone compounds. 4,609,712, Cl. 525-417.000.

Ewikon Entwicklung und Konstruktion GmbH & Co KG: *See—*
Muller, Walter, 4,609,341, Cl. 425-547.000.

Exxon Printing Systems, Inc.: *See—*
De Young, Thomas W., 4,609,924, Cl. 346-1.100.

Exxon Production Research Co.: *See—*
Guy, Arthur L.; and Plugge, John R., 4,609,307, Cl. 405-211.000.

Exxon Research and Engineering Co.: *See—*
Craig, Raymond C.; Panzer, Jerome; Wisotsky, Max J.; and Beltzer, Morton, 4,609,376, Cl. 44-53.000.

Eylers, Dieter, to Gottlieb Roll GmbH & Co. System for fastening pocket clips to metal caps or barrels of writing instruments. 4,608,733, Cl. 24-11.00F.

Faaborg, Paul G. Stove top broiler combination. 4,608,917, Cl. 99-340.000.

Fabrie, Robert A. M. J.: *See—*
Zufang, Arthur A.; and Fabrie, Robert A. M. J., 4,609,423, Cl. 156-555.000.

Facet Enterprises, Inc.: *See—*
Sekella, Thomas C., 4,609,080, Cl. 188-171.000.

FAG Kugelfischer Georg Schafer (KGaA): *See—*
Bayer, Oswald; Grehn, Martin; Hey, Edwin; Lorosch, Hans-Karl; and Vogel, Walter, 4,609,293, Cl. 384-469.000.

Fahey, Daniel T.; Butler, William D., Jr.; and Kauffman, Jack, to Federal Supply and Equipment Company. Modular unloading sequencing switching valve assembly for hydraulic system. 4,609,330, Cl. 417-288.000.

Fail Safe Brake Corporation: *See—*
Fontaine, William G., 4,608,825, Cl. 60-545.000.

Fairbanks, David W., to RCA Corporation. Positioning apparatus. 4,609,187, Cl. 269-8.000.

Fairchild Camera & Instrument Corporation: *See—*
Koh, Yun Bai; Chien, Frank; and Vora, Madhu, 4,609,568, Cl. 427-85.000.

Falcimaigne, Jean: *See—*
Schawann, Jean C.; Caumont, Jean P.; and Falcimaigne, Jean, 4,609,046, Cl. 166-341.000.

Fanetech Institute Limited: *See—*
Hayashi, Kanji, 4,608,942, Cl. 118-316.000.

Fariss, Gary M.: *See—*
Barnett, Scott L.; and Fariss, Gary M., 4,609,380, Cl. 51-298.000.

Farmitalia Carlo Erba, S.p.A.: *See—*
Doria, Gianfederico; Passarotti, Carlo; and Corno, Maria L., 4,609,660, Cl. 514-258.000.

Farrar, David, to Allied Colloids Limited. Synthesis of vinyl esters. 4,609,755, Cl. 560-217.000.

Farrar, Nigel R.: *See—*
Soni, Pravin L.; and Farrar, Nigel R., 4,609,845, Cl. 310-357.000.

Fasen, Kenneth R., to Liautaud, James P. Battery charger having automatic deep discharge mode. 4,609,860, Cl. 320-14.000.

Fastenmeier, Karl: *See—*
Flachenecker, Gerhard; Fastenmeier, Karl; and Linenmeier, Heinz, 4,609,879, Cl. 330-276.000.

Fathi, Saul S., to Ultima Electronics, Ltd. Voltage monitor and alarm for power line. 4,609,914, Cl. 340-660.000.

Fawzi, Maged M., to Du Pont de Nemours, E. I., and Company. Quinoxalinyloxy ethers as selective weed control agents. 4,609,396, Cl. 71-92.000.

Federal Equipment Company: *See—*
Doty, Verle L., 4,609,096, Cl. 198-464.400.

Federal Supply and Equipment Company: *See—*
Fahey, Daniel T.; Butler, William D., Jr.; and Kauffman, Jack, 4,609,330, Cl. 417-288.000.

Fehlbier, Alois: *See—*
Gruber, Hermann; and Fehlbier, Alois, 4,609,572, Cl. 427-385.500.

Felix, William V.: *See—*
The, Paul J.; and Felix, William V., 4,609,534, Cl. 423-49.000.

Feramatic AG: *See—*
Eberle, Jurg, 4,609,365, Cl. 474-154.000.

Ferguson, John H.; and Perkins, Dana P., to Parker Hannifin Corporation. Forged dissimilar metal assembly and method. 4,608,742, Cl. 29-458.000.

Ferramola, Gabriel D.: *See—*
Neugen, Dink; Bull, Stephen M.; and Ferramola, Gabriel D., 4,609,003, Cl. 137-2.000.

Ferrari, Gianpietro, to Honeywell Information Systems Italia. Circuit for detecting the failure of a step motor to respond to energization commands. 4,609,868, Cl. 324-158.0MG.

Ferrari, Harry M., to Westinghouse Electric Corp. Nuclear reactor component rods and method of forming the same. 4,609,524, Cl. 376-417.000.

Fetty, Harold D.; and Lindner, Daniel J., to Goodyear Tire & Rubber Company, The. Pneumatic tire. 4,609,022, Cl. 152-209.00R.

Fichtel & Sachs AG: *See*—
Itzinger, Hermann; and Christel, Werner, 4,609,082, Cl. 188-315.000.

Fife, Robert L.: *See*—
Shelton, John J., 4,609,012, Cl. 137-625.660.

Figgie International Inc.: *See*—
Morgan, Steven J.; and Martin, Gary L., 4,609,098, Cl. 198-781.000.

Finike Italiana Marposs S.p.A.: *See*—
Ventura, Luciano, 4,609,235, Cl. 312-330.00R.

Firestone Tire & Rubber Company, The: *See*—
Elefritz, Robert A.; Cole, William M.; and Johnson, Charles R., 4,609,724, Cl. 528-399.000.
Flygenring, Robert G., 4,609,510, Cl. 264-39.000.
Still, Donald O.; Hovance, Hubert T.; and Burley, George J., 4,608,890, Cl. 83-49.000.
Weyand, Harley P., Jr., 4,609,161, Cl. 242-55.000.

Fischer, Artur. Device for injecting a fixing agent into a drilled hole for anchoring a fastening element inserted in the drilled hole. 4,609,129, Cl. 222-145.000.

Fischer, Wolfgang; and Krug, William, to W. R. Grace & Co. Release agent and process performable therewith for the production of polyurethane foam. 4,609,511, Cl. 264-51.000.

Fisher, William C.; and Burns, Jeffery T., to General Telephone Company of the Northwest. Apparatus for pulling optical fiber cable. 4,609,180, Cl. 254-134.30R.

Fisher, William C.; and Burns, Jeffery T., to General Telephone Company of the Northwest. Method of pulling optical fiber cable. 4,609,181, Cl. 254-134.3FT.

Fitch-Wyckoff International, Inc.: *See*—
Miller, Richard D.; and Wyckoff, John W., 4,608,715, Cl. 2-1.000.

Fitze, Paul: *See*—
Minton, Allen P.; Attri, Arun K.; Sullivan, James V.; and Fitze, Paul, 4,609,991, Cl. 364-499.000.

Fitz-James, Philip C., to University of Western Ontario, Health Sciences Centre, The. *Bacillus cereus* subspecies *israelensis* . 4,609,550, Cl. 424-93.000.

Flachenecker, Gerhard; Fastenmeier, Karl; and Linenmeier, Heinz. Circuitry for a selective push-pull amplifier. 4,609,879, Cl. 330-276.000.

Flachsmann, Jean-Paul. Sliding-vehicle, particularly for sliding on snow and ice. 4,609,201, Cl. 280-20.000.

Flanagan, Robert J.: *See*—
Lees, Barry A.; Flanagan, Robert J.; and Hordon, Monroe J., 4,609,605, Cl. 430-58.000.

Flautt, Martin C.: *See*—
Pollet, Jean-Claude; Armstrong, Gordon P.; and Flautt, Martin C., 4,609,591, Cl. 428-391.000.

Fleischer, Niles A., to Rayovac Corporation. Minimization of voltage delay in lithium oxyhalide cells. 4,608,753, Cl. 29-623.100.

Flint & Walling, Inc.: *See*—
Klukowski, Chester; and Lysic, Richard, 4,608,862, Cl. 73-162.000.

Florence, Robert A. Floppy disk storage-ejection system. 4,609,232, Cl. 312-16.000.

Floyd, Lawrence, Jr.: *See*—
Knapp, John F.; Gruber, Robert J.; Floyd, Lawrence, Jr.; and Bolte, Steven B., 4,609,603, Cl. 430-39.000.

Flueli, Adolf, to Rieter Machine Works, Ltd. Thread winding geometry. 4,609,159, Cl. 242-18.0DD.

Flygare, Wayne A.: *See*—
Aleem, Mohd A.; Flygare, Wayne A.; and Kruger, E. William, 4,609,842, Cl. 310-112.000.

Flygenring, Robert G., to Firestone Tire & Rubber Company, The. Tire manufacturing process. 4,609,510, Cl. 264-39.000.

Flynn, George C., to Graver Company, The. Method and apparatus to convert top tube sheet filter to bottom tube sheet filter. 4,609,462, Cl. 210-232.000.

Flynn, James M., to Rockwell International Corporation. Digital modulation depth detector. 4,609,921, Cl. 343-411.000.

FMC Corporation: *See*—
Plummer, Ernest L., 4,609,732, Cl. 546-269.000.

Fogarty, Thomas J. Self-retracting dilatation catheter. 4,608,984, Cl. 128-344.000.

Fondacci, Jean-Luc; and Francois, Yves-Marie M. R., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.-M.A. System for controlling the valves of a turbo jet shaft engine nozzle. 4,608,822, Cl. 60-242.000.

Fontaine, William G., to Fail Safe Brake Corporation. Automatic brake actuator with controlled release. 4,608,825, Cl. 60-545.000.

Fontana, Don: *See*—
Bail, Dean M., 4,609,369, Cl. 604-56.000.

Fontana, John: *See*—
Bail, Dean M., 4,609,369, Cl. 604-56.000.

Ford Motor Company: *See*—
Chattha, Mohinder S., 4,609,719, Cl. 528-98.000.
Duffy, James J., 4,609,331, Cl. 417-293.000.
Heater, Thomas J.; and Donnelly, Murray P., 4,609,030, Cl. 164-137.000.
Porter, David L., 4,609,794, Cl. 200-24.000.

Forges, Robert: *See*—
Abbes, Claude; Rouaud, Christian; Valla, Jean; de Villepoix, Raymond; Demay, Robert; and Forges, Robert, 4,609,211, Cl. 285-325.000.

Foster Wheeler Energy Corporation: *See*—
Russo, William P., 4,608,964, Cl. 126-438.000.

Fox, Frederick L., Jr., to Harvey Hubbell Incorporated. Insulator with fiber optic communication channel. 4,610,033, Cl. 455-612.000.

Framatome & Cie: *See*—
Millot, Jean-Paul; Alibran, Patrice; Desfontaines, Guy; and Hittner, Dominique, 4,609,521, Cl. 376-173.000.

Franaszek, Peter A.: *See*—
Adler, Roy L.; Franaszek, Peter A.; Hassner, Martin; and Schneider, Richard C., 4,609,907, Cl. 340-347.0DD.

Francis, Ronald R.; and Mueller, Martin, to General Foods Corporation. Method and apparatus for filling and packaging a flowable product. 4,608,809, Cl. 53-471.000.

Franckowiak, Sigismond: *See*—
Deschamps, Andre ; Dezael, Claude; and Franckowiak, Sigismond, 4,609,456, Cl. 208-112.000.

Francois, Yves-Marie M. R.: *See*—
Fondacci, Jean-Luc; and Francois, Yves-Marie M. R., 4,608,822, Cl. 60-242.000.

Frank, Karl, to Agfa Gevaert Aktiengesellschaft. Bath composition for bleaching photographic recording materials and bleaching process. 4,609,616, Cl. 430-430.000.

Franklin, Andrew D.; Lothrop, John R.; and Wiidakas, John D. Trunk call processing services for host computer interconnections. 4,609,778, Cl. 179-2.0DP.

Frankovich, Robert: *See*—
Hartmann, Robert F.; Chan, Yiu-Fai; Frankovich, Robert; and Ou, Jung-Hsing, 4,609,986, Cl. 364-200.000.

Franks, Connie. Frame alignment indicator. 4,608,760, Cl. 33-180.0AT.

Franz Plasser Bahnbaumaschinen-Industriegesselschaft m.b.H.: *See*—
Theurer, Josef; and Oellerer, Friedrich, 4,608,928, Cl. 104-3.000.

Franz, Robert M., to Upjohn Company, The. Stable, high dose, high bulk density ibuprofen granulations for tablet and capsule manufacturing. 4,609,675, Cl. 514-568.000.

Franz Xaver Bayer Isolierglasfabrik KG: *See*—
Bayer, Franz, 4,608,802, Cl. 52-788.000.

Frasca, Thomas: *See*—
Pane, Francis C., Jr.; Matthews, John A.; Wright, Richard R.; Sarnik, John M.; and Frasca, Thomas, 4,609,150, Cl. 239-397.500.

Fredette, Richard. Corner piece for vinyl siding retainers. 4,608,800, Cl. 52-656.000.

Fredricksen, Hans P.: *See*—
Solie, Leland P.; and Fredricksen, Hans P., 4,609,891, Cl. 333-195.000.

Freermann, Johannes, to Carl Schmale GmbH & Co. KG. Device for tensioning and aligning a fabric. 4,609,182, Cl. 254-228.000.

Freiberg, Alan L.; Graiver, Daniel; Lim, Thomas F.; and Wright, Antony P., to Dow Corning Corporation. Silicone water-based emulsions having improved shelf life. 4,609,486, Cl. 252-310.000.

French, Park, to General Electric Company. High pressure sodium vapor lamp having D.C. resistive ballast circuits. 4,609,849, Cl. 315-200.00R.

Frese, Karl W., Jr.; Leach, Steven C.; and Summers, David P., to Gas Research Institute. Electrochemical synthesis of methane. 4,609,440, Cl. 204-76.000.

Frese, Karl W., Jr.; Leach, Steven C.; and Summers, David P., to Gas Research Institute. Electrochemical reduction of aqueous carbon dioxide to methanol. 4,609,441, Cl. 204-77.000.

Frick Company: *See*—
Pillis, Joseph W.; and Wile, Hans C., 4,609,329, Cl. 417-282.000.

Fricke, Hans-Joachim: *See*—
Aydin, Oral; Kast, Hans; and Fricke, Hans-Joachim, 4,609,420, Cl. 156-272.600.

Fried. Krupp GmbH: *See*—
Mertens, Peter; and Meuser, Wilfried, 4,608,857, Cl. 73-40.50R.

Frisby, Thomas M.; and Brooks, Gordon L., to ESAB North America, Incorporated, a part interest. Method and apparatus for cutting a pattern in material. 4,608,891, Cl. 83-56.000.

Frito-Lay, Inc.: *See*—
Becher, Michael G.; and Ke, Victor H., 4,609,555, Cl. 426-94.000.
Ryan, Philip J.; and McKee, Harris B., 4,608,808, Cl. 53-436.000.

Fritz, Hans-Gerhard; Schule, Helmut; Grunschloss, Eberhard; Riedel, Tomas; and Maier, Karl, to Hoechst Aktiengesellschaft. Solids concentrate which contains abrasive solids and causes little wear. 4,609,382, Cl. 51-298.000.

FSI Corporation: *See*—
Burkman, Don C., 4,609,575, Cl. 427-426.000.

Fuchigami, Takamasa: *See*—
Koishi, Toshio; Ishihara, Akira; Fuchigami, Takamasa; and Ojima, Iwao, 4,609,715, Cl. 526-245.000.

Fuchs, Alfred E.: *See*—
Giordano, John J.; Shawcross, Jeffrey P.; Fuchs, Alfred E.; and Dejaiffe, Robert, 4,609,587, Cl. 428-325.000.

Fudickar, Harald; and Thies, Peter, to Wagener Schwelm GmbH & Co. Clamping device for belts. 4,609,100, Cl. 198-854.000.

Fuji Electric Company Ltd.: *See*—
Yamamoto, Hitoshi; and Kurita, Masaya, 4,609,854, Cl. 318-471.000.

Fuji Electric Corporate Research & Development Ltd.: *See*—
Nishiura, Masaharu; and Nabeta, Osamu, 4,609,770, Cl. 136-244.000.

Fuji Electrochemical Co., Ltd.: *See*—
Torii, Michihiro; Moritomo, Takao; Endo, Kaoru; and Ito, Norifumi, 4,609,956, Cl. 360-100.000.
Fuji Flavor Company, Limited: *See*—
Masataka, Mori; Tatsuji, Chuman; Kunio, Kato; and Mikio, Ono, 4,609,764, Cl. 568-384.000.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Ohtaki, Kiyoshi; and Hara, Kazuo, 4,608,955, Cl. 123-408.000.
Fuji Photo Film Co., Ltd.: *See*—
Arai, Yoshihiro; Nahara, Akira; Nagao, Makoto; and Fukino, Kiyotaka, 4,609,962, Cl. 360-131.000.
Kamata, Kazuo, 4,609,269, Cl. 354-149.110.
Kohno, Atsuo; Shiiba, Minoru; and Kikuchi, Eishiroh, 4,609,270, Cl. 354-195.120.
Kuribayashi, Michio, 4,609,942, Cl. 352-140.000.
Sigyo, Masamiti; Wada, Minoru; and Takahashi, Yonosuke, 4,609,611, Cl. 430-270.000.
Sugimoto, Tadao; Yamada, Sumito; Ikeda, Tadashi; Takei, Haruo; and Okazaki, Masaki, 4,609,621, Cl. 430-567.000.
Fuji Xerox Co., Ltd.: *See*—
Miyazaki, Akira; and Yamaguchi, Jun-ichi, 4,609,919, Cl. 340-792.000.
Fujihisa, Hiroaki: *See*—
Ohishi, Hirotoshi; Fujii, Hiroshi; and Fujihisa, Hiroaki, 4,609,799, Cl. 200-153.00G.
Fujii, Hiroshi: *See*—
Ohishi, Hirotoshi; Fujii, Hiroshi; and Fujihisa, Hiroaki, 4,609,799, Cl. 200-153.00G.
Fujikawa, Taketoshi; and Kozuka, Kazuhiro, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Aspherical lens for use in optical equipment. 4,609,262, Cl. 350-432.000.
Fujimori, Noboru: *See*—
Yamazaki, Toshiaki; Nakadate, Takanori; Kitahara, Kenichi; Kobayashi, Morio; Fujimori, Noboru; and Shimosaki, Ryuji, 4,609,617, Cl. 430-535.000.
Fujimura, Shuzo, to Fujitsu Limited. Method and apparatus for microwave plasma anisotropic dry etching. 4,609,428, Cl. 156-643.000.
Fujioka, Yoshiharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Rotary thin film magnetic head device. 4,609,960, Cl. 360-108.000.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Itoh, Masumi; and Takenawa, Seishi, 4,609,490, Cl. 252-358.000.
Takaya, Takao; Masugi, Takashi; and Kawabata, Kohji, 4,609,730, Cl. 514-202.000.
Fujita, Akiharu; Sato, Minako; and Murakami, Masashige, to Toray Industries, Inc. Process for the depolymerization of polyester scrap. 4,609,680, Cl. 521-48.000.
Fujita, Hisanori: *See*—
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Hajjar, Abraham L., to General Electric Company. Method of hydrolyzing chlorosilanes. 4,609,751, Cl. 556-456.000.
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Hale, John D.; and Stott, Herbert L., to Colt Industries Operating Corp. Heavy-duty industrial weighing scale. 4,609,062, Cl. 177-256.000.
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Ham, Yong S. Mechanical boxing toy. 4,609,195, Cl. 273-85.00F.
Hamlin, Jerry F. Portable traction apparatus. 4,608,969, Cl. 128-71.000.
Hamm, Joseph M. Transformer clamp-down bracket. 4,609,901, Cl. 336-65.000.
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Hanlet, Jacques M., to Intent Patents A.G. Current driven gain controlled electronic ballast system. 4,609,850, Cl. 315-219.000.
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Harmsen, John L., to STEDEF S.A. Railroad tie cover. 4,609,144, Cl. 238-1.000.
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Boan, Bobby J.; Schwam, Martin; Sullivan, Marvin R.; and Morse, Amos W., 4,609,923, Cl. 343-897.000.
Harris, James E.; and Robeson, Lloyd M., to Union Carbide Corporation. Blends of poly(aryl ketones). 4,609,714, Cl. 525-471.000.
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Harrison, Arthur, to Mold-Masters Limited. Method of manufacturing injection molding manifold with plugs. 4,609,138, Cl. 228-161.000.
Hart, Michael L., to Industrial Technology Corporation. Timed dispenser of fluid additives. 4,609,127, Cl. 222-66.000.
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Hartmann, Robert F.; Chan, Yiu-Fai; Frankovich, Robert; and Ou, Jung-Hsing, to Altera Corporation. Programmable logic array device using EPROM technology. 4,609,986, Cl. 364-200.000.
Harvey, Arthur E., Sr.; and Harvey, Thomas J. Dental prosthesis and method. 4,609,355, Cl. 433-181.000.
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Fox, Frederick L., Jr., 4,610,033, Cl. 455-612.000.
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Hasebe, Kouki, to Tokyo Shibaura Denki Kabushiki Kaisha. Priority controller. 4,609,995, Cl. 364-900.000.
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Hashimoto, Kazuo, 4,609,783, Cl. 179-84.00A.
Hashimoto, Kazuo, to Hashimoto Corporation. Automatic telephone answering apparatus. 4,609,783, Cl. 179-84.00A.
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Haslam, James K.; and Waters, Sidney W., to Metal Box plc. Capping machines. 4,608,806, Cl. 53-314.000.
Haslett, Robert; and Harwell, William, to Grumman Aerospace Corporation. Temperature gradient furnace for materials processing. 4,609,035, Cl. 165-2.000.
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Hasspacher, Klaus, to Sandoz Ltd. Antiasthmatic piperidylidene derivatives. 4,609,664, Cl. 514-324.000.
Haswell, Walter T.; and Yolton, Charles F., to Crucible Materials Corporation. Method for compacting alloy powder. 4,609,526, Cl. 419-23.000.
Hata, Go; Etoh, Takeaki; Shirakawa, Toshifumi; Matsuura, Yuji; and Uchiyama, Takashi, to Soda Aromatic Company, Limited. Perfume composition containing an unsaturated aliphatic carboxylic acid. 4,609,492, Cl. 252-522.00R.
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Hattori, Shigenori; and Kinoshita, Naohisa, to Brother Kogyo Kabushiki Kaisha. Printing apparatus. 4,609,299, Cl. 400-229.000.
Hausman, Mary L.; Lenney, William E.; and Miller, Gerald D., to Air Products and Chemicals, Inc. Vinyl acetate/acrylate copolymer emulsions for paper coating compositions. 4,609,704, Cl. 524-710.000.
Hausmann, Gerhard; Mugrauer, Hubert; and Naeser, Helmut, to Siemens Aktiengesellschaft. Laser printing system with a solvent vapor fixing station and adaptable for either multicolor or verso printing. 4,609,279, Cl. 355-3.0SH.
Havlin, Vladimir: *See*—
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Kukes, Simon G.; and Hawley, Gil R., 4,609,638, Cl. 502-208.000.
Hawrylo, Frank Z., to RCA Corporation. Method of burnishing malleable films on semiconductor substrates. 4,609,139, Cl. 228-170.000.
Hayashi, Kanji, to Fanetech Institute Limited. Method of continuously spraying liquids onto lengthy bodies moving at high speed. 4,608,942, Cl. 118-316.000.
Hayashi, Kiyohide: *See*—
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Heater, Thomas J.; and Donnelly, Murray P., to Ford Motor Company. Method of increasing productivity of casting vee configuration engine blocks in a given mold. 4,609,030, Cl. 164-137.000.
Heckmann, Klaus; and Spurny, Jiri, to Kernforschungszentrum Karlsruhe GmbH. Process for selective separation of plutonium from uranium and other metals. 4,609,533, Cl. 423-18.000.
Hedel, Rudolph H.; and Dischert, William A., to RCA Corporation. Apparatus for sorting cylindrical work pieces having a longitudinal flat according to their rotational orientation. 4,609,094, Cl. 198-380.000.
Heerdink, Robert J.; and Vogt, James L., to Deere & Company. Vehicle hood mounting. 4,609,063, Cl. 180-69.230.
Heidelberger Druckmaschinen AG: *See*—
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Heilweil, Israel J., to Mobil Oil Corporation. High temperature stable aqueous brine fluids. 4,609,476, Cl. 252-8.55R.
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Hendrix, Junior F., 4,609,459, Cl. 210-91.000.
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Henkel Kommanditgesellschaft auf Aktien: *See*—
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Henry, Sidney M., Jr.: *See*—
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Hercules Incorporated: *See*—
Cartwright, Richard V., 4,609,415, Cl. 149-2.000.
Hering, Reinhard. Panels or moulded elements designed as heat-exchangers. 4,608,960, Cl. 126-431.000.
Herlihy, Walter C., to Repligen Corporation. Process for tanning the skin. 4,609,544, Cl. 424-59.000.
Hernandez, Genaro C. Method and apparatus for applying powdered substances on farm fields, forests and swamp areas. 4,609,152, Cl. 239-659.000.
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Heywang, Gerhard: *See*—
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Hickey, Charles P.; and Oostdik, Dennis J. Multi-compartment jug. 4,608,837, Cl. 62-400.000.
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Higgins, Robert J., Jr., to Motorola, Inc. Stripline filter apparatus and method of making the same. 4,609,892, Cl. 333-204.000.
Hilgeman, Theodore: *See—*
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Hill, Carl J., deceased: *See—*
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Hill, Derek; Lauterbach-Dammler, Inge; Taube, Tom; and Zollner, Dieter, to Arc Technologies Systems Ltd. Electrode assembly for arc furnaces. 4,610,015, Cl. 373-93.000.
Hill, Hazel R., executrix: *See—*
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Hills, Gary G., to Teltronics, Inc. Method and apparatus for applying stretchable, protective wrap. 4,609,579, Cl. 428-195.000.
Hilpert, Bruno, to BBC Brown, Boveri & Company, Limited. Board holding device, in particular for RF printed circuit boards, and a method of manufacturing it. 4,609,970, Cl. 361-399.000.
Himmelberger, John E.; and Scharf, James O., to Harvey Hubbell Incorporated. Method for making armored electrical cable. 4,609,416, Cl. 156-53.000.
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Hiratani, Hajime, to Japan Chemical Research Co., Ltd. Long-acting composition. 4,609,546, Cl. 424-83.000.
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Hiroshi, Tamura: *See—*
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Hirsch, Kenneth S.; Jones, Charles D.; and Taylor, Harold M., to Eli Lilly and Company. Aromatase inhibiting derivatives of α,α-bis(4-halophenyl)methyltetrazoles and triazoles. 4,609,666, Cl. 514-359.000.
Hirschberg, Eugene H.: *See—*
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Hisamoto, Iwao; Maeda, Chiaki; and Nishiwaki, Mitsuhiro, to Daikin Kogyo Co., Ltd. Fluorine-containing surface active composition. 4,609,489, Cl. 252-355.000.
Hisamoto, Yoshiaki: *See—*
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Hishinuma, Hiroshi; Miyasaka, Masao; Okada, Kenji; and Morio, Shuichi, to Hitachi Koki Company, Limited. Paper hole detecting apparatus with slidable reflector. 4,609,815, Cl. 250-222.100.
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Tabata, Kuniaki; Machida, Tetsuo; Takeda, Haruo; Takada, Naoki; and Okada, Yasuyuki, 4,610,026, Cl. 382-47.000.
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Yamaguchi, Hiroshi; Shimase, Akira; Miyauchi, Tateoki; and Hongo, Mikio, 4,609,809, Cl. 219-121.0EM.
Hitchcock, David C.; Mailhe, Catherine C.; and De Jonghe, Lutgard C., to United States of America, Energy. Electrochemical devices utilizing molten alkali metal electrode-reactant. 4,609,596, Cl. 429-104.000.
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Hodges, Michael J., to Detexomat Machinery Limited. Hosiery toe closing method and apparatus. 4,609,419, Cl. 156-152.000.
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Hoffman, Gilbert A., to Tektronix, Inc. Switching power supply with transistor drive circuit. 4,609,980, Cl. 363-20.000.
Hoffman, Michael E.: *See—*
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Hoover Universal, Inc.: *See—*
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Hordis Brothers, Inc.: *See—*
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Lees, Barry A.; Flanagan, Robert J.; and Hordon, Monroe J., 4,609,605, Cl. 430-58.000.
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Horna, Otakar A., to Communications Satellite Corporation. Echo canceller with extended frequency range. 4,609,787, Cl. 179-170.200.

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Jones, Jesse D.; and Hornbaker, Edwin D., 4,609,701, Cl. 524-178.000.
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Annoot, Ira R., 4,609,247, Cl. 339-60.00M.
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Still, Donald O.; Hovance, Hubert T.; and Burley, George J., 4,608,890, Cl. 83-49.000.
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Ozawa, Lyuji; Schmidt, Hans; Hsu, Mike; and Perlmutter, Arye, 4,608,994, Cl. 128-670.000.
Hu, Hsun, to United States Steel Corporation. Method for producing high-strength deep-drawable dual-phase steel sheets. 4,609,410, Cl. 148-142.000.
Huang, Eddy C., to VLSI Technology, Inc. Programmable array combinatorial (PAC) circuitry. 4,609,838, Cl. 307-465.000.
Huang, Shyh-Chin: *See*—
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Huang, Yung H. Lockable steering structure having a vertically slidable locking block. 4,608,729, Cl. 16-35.00R.
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Huck Manufacturing Company: *See*—
Dixon, Richard D.; and Hicks, Marvin R., 4,609,317, Cl. 411-339.000.
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Squarci, Larry, 4,609,989, Cl. 364-468.000.
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Hughes Helicopters, Inc.: *See*—
Logan, Andrew H.; and Graves, John D., 4,609,165, Cl. 244-17.190.
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Elliott, Hilton F., 4,609,405, Cl. 127-3.000.
Hummel, Werner: *See*—
Leuchtenberger, Wolfgang; Hummel, Werner; Kula, Maria-Regina; and Schutte, Horst, 4,609,623, Cl. 435-130.000.
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Hunt, John F., to United States of America, Agriculture. Process and apparatus for simulating a rolling and drying operation. 4,608,765, Cl. 34-12.000.
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Brugman, Johannes A. H., 4,608,849, Cl. 72-217.000.
Hunter, William J.: *See*—
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Husbands, George E. M., to American Home Products Corporation. Phenoxyethylamine derivatives. 4,609,758, Cl. 564-348.000.
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Huybrechts, Jozef T.; and Meeus, Ferdinand F., to Du Pont de Nemours, E. I., and Company. Low temperature curing maintenance coatings comprising (a) epoxy resin (b) polyamine curing agent (c) polymer containing pendant aminoester groups and (d) organic solvent. 4,609,692, Cl. 523-439.000.
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Meyer, Rolf-Volker; Reinking, Klaus; Idel, Karsten-Josef; and Dhein, Rolf, 4,609,699, Cl. 524-100.000.
Idemitsu Kosan Company Limited: *See*—
Hata, Hitoshi; Sasaki, Akira; and Yamada, Hisao, 4,609,480, Cl. 252-32.70E.
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Thaler, Michael R., 4,609,946, Cl. 358-286.000.
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Imaizumi, Masaki, to Olympus Optical Co., Ltd. Telephoto lens system having an improved focusing arrangement. 4,609,263, Cl. 350-454.000.
Imamura, Yoshinori: *See*—
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Link, Helmut F.; and Hafla, Dietmar F., 4,608,747, Cl. 29-568.000.
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Pamment, Noel G., 4,609,117, Cl. 220-1.00T.
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Hart, Michael L., 4,609,127, Cl. 222-66.000.
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Gamba, Piero, 4,609,981, Cl. 363-22.000.
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Insley, Thomas I.: *See*—
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Institut Francais du Petrole: *See*—
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Intent Patents A.G.: *See*—
Hanlet, Jacques M., 4,609,850, Cl. 315-219.000.
International Business Machines Corporation: *See*—
Adler, Roy L.; Franaszek, Peter A.; Hassner, Martin; and Schneider, Richard C., 4,609,907, Cl. 340-347.0DD.
Anderson, Karen L.; Goertzel, Gerald; and Mitchell, Joan L., 4,610,027, Cl. 382-56.000.
Aviram, Ari; and Dove, Derek B., 4,609,926, Cl. 346-76.0PH.
Cohen, Donald K., 4,609,813, Cl. 250-201.000.
Ishaq, Mousa H.; and Noble, Wendell P., Jr., 4,609,429, Cl. 156-656.000.
Kummer, David A., 4,609,996, Cl. 364-900.000.

Lennemann, Eckart; and Ruppert, Werner, 4,609,818, Cl. 250-234.000.
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International Coal Refining Company: *See*—
Weimer, Robert F.; and Miller, Robert N., 4,609,455, Cl. 208-412.000.
International Flavors & Fragrances Inc.: *See*—
Hall, John B.; Sanders, James M.; and Siano, James N., 4,609,754, Cl. 560-178.000.
International Standard Electric Corporation: *See*—
Rabaey, Dirk H. L. C.; and Haspeslagh, Didier R., 4,610,018, Cl. 375-25.000.
Interpace Corporation: *See*—
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Interthyr Research Foundation Inc.: *See*—
Kohn, Leonard D.; Valente, William A.; Grollman-Wolff, Evelyn F.; Aloj, Salvatore M.; and Vitti, Paolo, 4,609,622, Cl. 435-29.000.
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Iohara, Kohichi; and Matsui, Michikage, to Teijin Limited. Undrawn polyester yarn and process for manufacturing. 4,609,710, Cl. 525-176.000.
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Perper, Lloyd J., 4,609,852, Cl. 315-278.000.
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Kamio, Morinori; Tsuji, Masahiro; Kawauchi, Susumu; Ono, Jun; Isayama, Hideki; Nishimoto, Akihiko; Miyawaki, Yoshiharu; Nozoe, Osamu; and Iwase, Koji, 4,609,412, Cl. 148-12.00C.
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Ishiguro, Yasuo, to Copal Company Limited. Exposure control unit. 4,609,275, Cl. 354-435.000.
Ishihara, Akira: *See*—
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Ishikawa, Hiroshi; Oguro, Keisuke; Suzuki, Hiroshi; Kato, Akihiko; Okada, Teruya; Sakamoto, Shizuo; Nishimura, Iwao; and Sakaguchi, Keizo, to Agency of Industrial Science & Technology; and Kurimoto, Ltd. Heat exchanger using a hydrogen occlusion alloy. 4,609,038, Cl. 165-104.120.
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Ishikawa, Soichi: *See*—
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Ishioka, Sachio: *See*—
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Ito, Kiyoteru: *See*—
Yokoyama, Yoshihiro; Urata, Yoshito; Watanabe, Kazuo; and Ito, Kiyoteru, 4,609,277, Cl. 355-3.00R.
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ITT Corporation: *See*—
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ITT Industries, Inc.: *See*—
Kristanek, Henri; and Degrange, Pierre, 4,609,793, Cl. 200-16.00D.
Itzinger, Hermann; and Christel, Werner, to Fichtel & Sachs AG. Double-tube vibration damper unit. 4,609,082, Cl. 188-315.000.
Ivey, James H., to Long, Charles E.; and Austin, Charles S. Measuring and cutting tool guiding device for use in the formation of fiber glass ducts. 4,608,902, Cl. 83-875.000.
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Baker, Joe L.; and Brown, Thomas R., 4,609,216, Cl. 292-262.000.
Johnson, Stephen D., 4,608,911, Cl. 91-445.000.
J. M. Huber Corporation: *See*—
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Jackson, Samuel G., to Proficient Systems, Inc. Litter retrieving machine. 4,608,725, Cl. 15-3.000.
Jacobs, John H., to Datatape Incorporated. Faraday-effect magneto-optic transducer. 4,609,961, Cl. 360-114.000.
Jacobs, Lynn C.: *See*—
Irvin, Ronald D.; Offerman, Karl B.; and Jacobs, Lynn C., 4,609,958, Cl. 360-106.000.
Jacobs, Maurice A.; and Woznikoski, Alvin L. Root and rock picker. 4,609,050, Cl. 171-65.000.
Jacobsson, Birger. Enclosed system for weighing. 4,609,061, Cl. 177-180.000.
James A. Rhodes & Associates: *See*—
Rhodes, James; Wren, Michael; Lantz, Paul W.; and Acock, George W., Jr., 4,608,785, Cl. 52-2.000.
James, Andre : *See*—
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James River - Dixie Northern Inc.: *See*—
Van Handel, Gerald J.; Petit, John L.; and Wnek, Patrick H., 4,609,140, Cl. 229-2.50R.
Jamgotchian, George H. Magnetic terminal-plate cable end connection for battery. 4,609,238, Cl. 339-12.00R.
Janda, George M., to GTE Communications Systems Corporation. Venting cap for apparatus housing. 4,609,126, Cl. 220-374.000.
Janome Sewing Machine Co., Ltd.: *See*—
Eguchi, Yasukata, 4,608,937, Cl. 112-121.130.
Japan Chemical Research Co., Ltd.: *See*—
Hiratani, Hajime, 4,609,546, Cl. 424-83.000.
Japan Tobacco & Salt Public Corporation, The: *See*—
Masataka, Mori; Tatsuji, Chuman; Kunio, Kato; and Mikio, Ono, 4,609,764, Cl. 568-384.000.
Japan Vilene Co. Ltd.: *See*—
Fushiki, Takeo; Takahashi, Koji; and Okazaki, Morio, 4,609,039, Cl. 165-174.000.
Jayaraman, Raj; and Singer, Barry M., to North American Philips Corporation. Conductivity-enhanced combined lateral MOS/bipolar transistor. 4,609,929, Cl. 357-23.400.
Jeffers, Edward A. Corona discharge freon gas sensor having electrical wind pumping action. 4,609,875, Cl. 324-455.000.
Jensen, Jakob N., to Helioprint AS. Device for exposing small originals in a reproduction camera. 4,609,284, Cl. 355-68.000.

Jensen, Warren M.; and Wilkinson, William C., to Boeing Company, The. Thermally conductive printed wiring board laminate. 4,609,586, Cl. 428-209.000.

Jessen, Thomas. Injection gun system for lawn treatment. 4,609,149, Cl. 239-310.000.

Jet Research Center, Inc.: *See—*
Walker, Jerry L.; Crummett, Donald L.; and Behling, William C., 4,609,057, Cl. 175-4.600.

Jim Walter Research Corp.: *See—*
Israel, Michael G., 4,609,513, Cl. 264-122.000.

Joh. Friedrich Behrens AG: *See—*
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John Wyeth & Brother, Ltd.: *See—*
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Shepherd, Robin G., 4,609,748, Cl. 556-410.000.

Johnson, Charles R.: *See—*
Elefritz, Robert A.; Cole, William M.; and Johnson, Charles R., 4,609,724, Cl. 528-399.000.

Johnson, Robert R., to Brown & Williamson Tobacco Corporation. Cigarette filter. 4,608,999, Cl. 131-336.000.

Johnson, Russell L., to Kimberly-Clark Corporation. Sanitary napkin with attachment means. 4,609,373, Cl. 604-389.000.

Johnson, Stephen D., to J. I. Case Company. Locking circuit for hydraulic systems. 4,608,911, Cl. 91-445.000.

Johnson, Thomas M.: *See—*
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Jones, Charles D.: *See—*
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Jones, David M.: *See—*
Szelke, Michael; Jones, David M.; and Hallett, Allan, 4,609,643, Cl. 514-16.000.

Jones, Jesse D.; and Hornbaker, Edwin D., to Ethyl Corporation. Thermoplastic PVC molding compositions. 4,609,701, Cl. 524-178.000.

Joormann, Hendrik J. M.; and Van Gorp, Alois J. M., to U.S. Philips Corporation. Dielectric glass in multilayer circuits and thick-film circuits comprising same. 4,609,582, Cl. 428-138.000.

Juengel, Richard O.: *See—*
Manns, Paul A.; and Juengel, Richard O., 4,608,763, Cl. 33-561.000.

Julius Blum Gesellschaft m.b.H.: *See—*
Blum, Dietmar, 4,609,310, Cl. 408-35.000.

Jurgec, Milan; Rucman, Rudolf; Stanovnik, Branko; and Tisler, Miha, to Sandoz Ltd. Process for brominating ergot alkaloids. 4,609,731, Cl. 544-346.000.

Jurjevic, Richard A.; and Schmidt, William J., to Vernay Laboratories, Inc. Variable rate flow controller. 4,609,014, Cl. 138-45.000.

Jwo, Yih K.: *See—*
Chern, Shinn I.; and Jwo, Yih K., 4,609,179, Cl. 254-102.000.

Kabushiki Kaisha Daikin Seisakusho: *See—*
Takeuchi, Hiroshi, 4,609,088, Cl. 192-106.100.

Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Sashiki, Takashi; and Sakaeda, Keiko, 4,609,058, Cl. 177-1.000.

Kabushiki Kaisha Kuken: *See—*
Kobayashi, Takashi; and Mizuhara, Masaru, 4,609,089, Cl. 192-138.000.

Kabushiki Kaisha Okawara Seisakusho: *See—*
Kawai, Sumio; Nagasawa, Kazumasa; and Kishihata, Kazuo, 4,608,766, Cl. 34-57.00A.

Kabushiki Kaisha Toshiba: *See—*
Harada, Nozomu; and Komatsubara, Yoshiaki, 4,608,749, Cl. 29-572.000.
Koike, Hideharu, 4,609,836, Cl. 307-451.000.
Natori, Kenji, 4,610,003, Cl. 365-228.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Fujikawa, Taketoshi; and Kozuka, Kazuhiro, 4,609,262, Cl. 350-432.000.

Kaifu, Hitoshi: *See—*
Fukushima, Matsuhiro; Kaifu, Hitoshi; and Oyobiki, Yoshinori, 4,608,784, Cl. 51-237.00R.

Kaise, Hitoshi, to Nippon Seimitsu Kogyo Kabushiki Kaisha. Iris diaphragm device for a camera. 4,609,273, Cl. 354-271.100.

Kaiwa, Ryoichi; and Suganuma, Yuichiro, to Matsushita Electric Industrial Co., Ltd. Locking apparatus for telephone. 4,609,790, Cl. 179-189.00R.

Kajikawa, Norio: *See—*
Ohishi, Yoshitaka; Nagahara, Michiko; Takehisa, Yoshitaka; Yajima, Motoyuki; Kurokawa, Shigeki; Kajikawa, Norio; and Itoh, Akira, 4,609,736, Cl. 548-183.000.

Kaken Pharmaceutical Co., Ltd.: *See—*
Nogimori, Katsumi; Tamura, Makoto; Kurokawa, Shigeki; and Yajima, Motoyuki, 4,609,549, Cl. 424-92.000.
Ohishi, Yoshitaka; Nagahara, Michiko; Takehisa, Yoshitaka; Yajima, Motoyuki; Kurokawa, Shigeki; Kajikawa, Norio; and Itoh, Akira, 4,609,736, Cl. 548-183.000.

Kakushima, Masatoshi: *See—*
Young, Robert N.; Rokach, Joshua; Williams, Haydn R.; Kakushima, Masatoshi; and Guindon, Yvan, 4,609,744, Cl. 549-402.000.

Kamata, Kazuo, to Fuji Photo Film Co., Ltd. Wide-angle/telephotography convertible camera with electronic flash. 4,609,269, Cl. 354-149.110.

Kameyama, Yutaka: *See—*
Torii, Sigeru; Tanaka, Hideo; Sasaoka, Michio; Uto, Seiryu; and Kameyama, Yutaka, 4,609,438, Cl. 204-72.000.

Kamimura, Tetsuro: *See—*
Komatsubara, Masahiro; Kamimura, Tetsuro; Inanaga, Takugi; and Takahashi, Akira, 4,609,164, Cl. 242-199.000.

Kamio, Morinori; Tsuji, Masahiro; Kawauchi, Susumu; Ono, Jun; Isayama, Hideki; Nishimoto, Akihiko; Miyawaki, Yoshiharu; Nozoe, Osamu; and Iwase, Koji, to Nippon Mining Co., Ltd; and Nippon Kokan Kabushiki Kaisha. Al-killed cold-rolled steel sheet with excellent demagnetization characteristics and process for producing the same, and shadow mask and color television using the same. 4,609,412, Cl. 148-12.00C.

Kanada, Kenji: *See—*
Sugiura, Sabro; Hayashi, Kiyohide; Kanada, Kenji; Demukai, Noboru; and Okamoto, Tetsuo, 4,609,538, Cl. 423-244.000.

Kanazawa, Kiyosumi: *See—*
Hosaka, Akihiko; Okuyama, Kiyotaka; and Kanazawa, Kiyosumi, 4,609,588, Cl. 428-329.000.

Kanbe, Junichiro: *See—*
Shirai, Shigeru; Kanbe, Junichiro; and Fukuda, Tadaji, 4,609,601, Cl. 430-31.000.

Kanda, Jun: *See—*
Ishibashi, Masaya; Kiyomiya, Masaaki; and Kanda, Jun, 4,610,008, Cl. 369-34.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Takata, Satoshi; and Tani, Nobutaka, 4,609,461, Cl. 210-195.200.

Kaneko, Shouji, to NEC Corporation. Dynamic memory circuit with improved noise-prevention circuit arrangement for word lines. 4,610,002, Cl. 365-206.000.

Kanten, H. Gordon: *See—*
Rogier, Edgar R.; Kanten, H. Gordon; and Peerman, Dwight E., 4,609,723, Cl. 528-339.300.

Karna, Toivo, to Neste Oy. Ignition device for fluidized bed boiler. 4,608,944, Cl. 122-4.00D.

Karolinska Institutet Institutionen for Medicinsk Teknik: *See—*
Linnarsson, Dag; and Larsson, Hans, 4,608,995, Cl. 128-713.000.

Karrer, Friedrich; and Rody, Jean, to Ciba-Geigy Corporation. Oligoesters containing polyalkylpiperidine groups. 4,609,698, Cl. 524-99.000.

Karttunen, Johannes: *See—*
Huhtala, Esko; Laaksonen, Markku; Vaho, Matti; Karttunen, Johannes; and Eklund, Gosta, 4,610,029, Cl. 383-10.000.

Karwat, Heinz, to Linde Aktiengesellschaft. Process for scrubbing gaseous components out of gaseous mixtures. 4,609,389, Cl. 62-17.000.

Kasai, Kazumi, to Nippon Notion Kogyo Co., Ltd. Sliding bar buckle. 4,608,735, Cl. 24-196.000.

Kasanami, Tohru: *See—*
Senda, Atsuo; Kasanami, Tohru; and Nakagawa, Takuji, 4,609,409, Cl. 148-13.000.

Kasper, Kevin; and Nigro, Paul, to ADE, Inc. RFI shielded, multiple part container and components thereof. 4,609,104, Cl. 206-334.000.

Kast, Hans: *See—*
Aydin, Oral; Kast, Hans; and Fricke, Hans-Joachim, 4,609,420, Cl. 156-272.600.

Kataoka, Hiroshi. Sheet winding apparatus. 4,609,162, Cl. 242-56.00R.

Kato, Akihiko: *See—*
Ishikawa, Hiroshi; Oguro, Keisuke; Suzuki, Hiroshi; Kato, Akihiko; Okada, Teruya; Sakamoto, Shizuo; Nishimura, Iwao; and Sakaguchi, Keizo, 4,609,038, Cl. 165-104.120.

Kato, Kazuo: *See—*
Taketani, Toshinobu; Ota, Minoru; Kobayashi, Masafumi; and Kato, Kazuo, 4,609,093, Cl. 198-378.000.

Kato, Masatake: *See—*
Yokota, Hideo; Kato, Masatake; and Nishimura, Tetsuharu, 4,609,272, Cl. 354-225.000.

Kato, Shizuo: *See—*
Shimada, Yukio; Kato, Shizuo; and Tajima, Katsuichiro, 4,608,914, Cl. 98-2.060.

Kato, Yukihiro: *See—*
Nakada, Yasuo; and Kato, Yukihiro, 4,609,944, Cl. 358-228.000.

Katoh, Katsunori; and Nakagawa, Satoshi, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide color photographic material. 4,609,619, Cl. 430-553.000.

Katoh, Kenji; Yamada, Toshio; Shindo, Kenichiro; Matsushita, Souichi; and Inoue, Tokuta, to Toyota Jidosha Kabushiki Kaisha. Operating apparatus for lean burn internal combustion engine. 4,608,956, Cl. 123-417.000.

Katsuki, Kanji: *See—*
Higashino, Shigenori; Shikano, Yoshiro; and Katsuki, Kanji, 4,609,831, Cl. 307-270.000.

Katva, Ilmari, to Plum Kemi Produktion A/S. Arrangement in liquid dispensers. 4,609,130, Cl. 222-207.000.

Katz, R. Nathan: *See—*
Messier, Donald R.; DeGuire, Eileen J.; and Katz, R. Nathan, 4,609,631, Cl. 501-35.000.

Kauffman, Jack: *See—*
Fahey, Daniel T.; Butler, William D., Jr.; and Kauffman, Jack, 4,609,330, Cl. 417-288.000.

Kawabata, Kohji: *See—*
Takaya, Takao; Masugi, Takashi; and Kawabata, Kohji, 4,609,730, Cl. 514-202.000.

Kawai Musical Instrument Mfg. Co., Ltd.: *See—*
Deutsch, Ralph, 4,608,903, Cl. 84-1.010.

Kawai, Sumio; Nagasawa, Kazumasa; and Kishihata, Kazuo, to Kabushiki Kaisha Okawara Seisakusho. Horizontal fluidized-bed dryer with heat transfer tubes. 4,608,766, Cl. 34-57.00A.

Kawai, Tohru, to Canon Kabushiki Kaisha. Automatic focusing apparatus for zoom lens. 4,609,260, Cl. 350-430.000.

Kawamura, Eiichi: *See*—
Kubo, Keishi; Takigawa, Nobuhiro; and Kawamura, Eiichi, 4,609,928, Cl. 346-208.000.

Kawamura, Yoshihisa: *See*—
Asano, Masaharu; Kawamura, Yoshihisa; and Nakagawa, Toyoaki, 4,609,292, Cl. 374-144.000.

Kawanabe, Takao: *See*—
Hongo, Mikio; Mizukoshi, Katsurou; Miyauchi, Tateoki; Kawanabe, Takao; and Koizumi, Yasuhiro, 4,609,566, Cl. 427-53.100.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Okamoto, Hiroshi, 4,608,777, Cl. 49-214.000.
Oshino, Masao; and Nakatani, Yasuhiko, 4,609,313, Cl. 410-67.000.

Kawauchi, Susumu: *See*—
Kamio, Morinori; Tsuji, Masahiro; Kawauchi, Susumu; Ono, Jun; Isayama, Hideki; Nishimoto, Akihiko; Miyawaki, Yoshiharu; Nozoe, Osamu; and Iwase, Koji, 4,609,412, Cl. 148-12.00C.

Kawazu, Ryuji: *See*—
Yamashita, Yoshio; and Kawazu, Ryuji, 4,609,615, Cl. 430-325.000.

Ke, Victor H.: *See*—
Becher, Michael G.; and Ke, Victor H., 4,609,555, Cl. 426-94.000.

Keck, Timothy A.: *See*—
Becker, Robert W.; Keck, Timothy A.; and Madsen, John E., 4,609,862, Cl. 322-90.000.

Keinath, David P.: *See*—
Bell, Jerry L.; Douma, John D.; Keinath, David P.; and Moore, Robert E., 4,608,895, Cl. 83-345.000.

Keller, Daniel N. Overhead door. 4,609,027, Cl. 160-207.000.

Kelly, Frank M., to Aluminum Company of America. Screwcapping machine. 4,608,805, Cl. 53-308.000.

Kemeny, George A.: *See*—
Carlson, Richard J.; and Kemeny, George A., 4,608,908, Cl. 89-8.000.

Kemmner, Ulrich, to Robert Bosch GmbH. Aggregate for supplying fuel, particularly from a supply container to an internal combustion engine of a motor vehicle. 4,608,957, Cl. 123-467.000.

Kemper, Reinhard; and Liedek, Egon, to BASF Aktiengesellschaft. Disazo dyes derived from 3,3'-dihalo-5,5'-dichlorobenzidine. 4,609,726, Cl. 534-760.000.

Kemppainen, Nels E., to ADC Telecommunications, Inc. Electrical connector apparatus. 4,609,242, Cl. 339-17.0LC.

Keoshkerian, Barkev: *See*—
Ong, Beng S.; Murti, Dasarao K.; and Keoshkerian, Barkev, 4,609,602, Cl. 430-58.000.

Keoteklian, Hagop, to Entenmanns, Inc. Method for treating plant effluent. 4,609,469, Cl. 210-609.000.

Kernforschungszentrum Karlsruhe GmbH: *See*—
Heckmann, Klaus; and Spurny, Jiri, 4,609,533, Cl. 423-18.000.

Kerr Glass Manufacturing Corporation: *See*—
Roy, Gerald L., 4,609,114, Cl. 215-220.000.

Kervennal, Jacques: *See*—
Braunstein, Pierre; Kervennal, Jacques; Richert, Jean-Luc; and Ries, Michel, 4,609,639, Cl. 502-326.000.

Keryk, John R.; Lo, Peter Y. K.; and Thayer, LeRoy E., to Dow Corning Corporation. Silicone release coatings containing higher alkenyl functional siloxanes. 4,609,574, Cl. 427-407.100.

Kessler, Robert G., to Champion International Corporation. Elimination of ink splattering due to static friction in rotogravure printing. 4,608,924, Cl. 101-170.000.

Keyes, Melvin H.; and Vasan, Saraswathi, to Owens-Illinois, Inc. Process for the production of modified proteins and product thereof. 4,609,625, Cl. 435-176.000.

Khan, Ahmad H.: *See*—
Pampalone, Thomas R.; Khan, Ahmad H.; and DiPiazza, James J., 4,609,614, Cl. 430-323.000.

Khare, Ashok K., to National Forge Co. Warm-working of austenitic stainless steel. 4,608,851, Cl. 72-364.000.

Khoobiar, Sargis; and Shapiro, Arnold J., to Halcon SD Group, Inc., The. Process for preparing unsaturated nitriles from alkanes. 4,609,502, Cl. 558-320.000.

Kikuchi, Eishiroh: *See*—
Kohno, Atsuo; Shiiba, Minoru; and Kikuchi, Eishiroh, 4,609,270, Cl. 354-195.120.

Kilby, James D.: *See*—
Reynolds, Don E.; and Kilby, James D., 4,609,472, Cl. 210-750.000.

Kilroy, James W., to UOP Inc. Operation of continuous extraction process. 4,609,457, Cl. 208-311.000.

Kim, Song J.: *See*—
Lee, Ki S.; Kim, Song J.; Lee, Hyok; and Lee, Kwang U., 4,608,894, Cl. 83-322.000.

Kimberly-Clark Corporation: *See*—
Johnson, Russell L., 4,609,373, Cl. 604-389.000.
Rockett, Luann T.; Nielsen, David A.; Shipp, Peter W., Jr.; and Knopp, Greggory I., 4,609,580, Cl. 428-198.000.

Kimura, Hiroyuki; Yazaki, Mutsunobu; and Yamada, Tateo, to Canon Kabushiki Kaisha. Automatic film winding device. 4,609,163, Cl. 242-71.000.

Kimura, Masamichi: *See*—
Ashizaki, Shigeya; Kimura, Masamichi; and Taniguchi, Masato, 4,609,847, Cl. 313-413.000.

Kimura, Yoshiaki: *See*—
Nozu, Taketo; Kimura, Yoshiaki; and Tanaka, Yasuhiko, 4,609,925, Cl. 346-1.100.

Kindinger, Peter A.; and Eriksson, Einar A., to Motorola, Inc. Level control for a voltage controlled oscillator. 4,609,884, Cl. 331-109.000.

King, Robert B.; and Borodinsky, Lester, to University of Georgia, The. Poly(vinyliminomethylene) from vinyl isocyanide. 4,609,716, Cl. 526-310.000.

King, William M., Jr., to American Hoechst Corporation. High efficiency extraction method for recovering oxidation catalyst material from dimethyl terephthalate esterified oxidate residue and the like. 4,609,634, Cl. 502-24.000.

Kinoshita, Naohisa: *See*—
Hattori, Shigenori; and Kinoshita, Naohisa, 4,609,299, Cl. 400-229.000.

Kirshenbaum, Gerald S.; Goldin, Michael; and Case, W. Alan, to Celanese Corporation. Process for making molding grade polyethylene terephthalate. 4,609,721, Cl. 528-285.000.

Kiryu, Kyuji: *See*—
Hirose, Yoshiyuki; and Kiryu, Kyuji, 4,609,856, Cl. 318-640.000.

Kishi, Norimasa: *See*—
Noso, Kazunori; Kishi, Norimasa; and Futami, Toru, 4,610,023, Cl. 381-43.000.

Kishi, Tomomi; Awano, Yoshiroh; and Takao, Yasuhide, to Toyota Jidosha Kabushiki Kaisha. Arc welding apparatus. 4,609,804, Cl. 219-74.000.

Kishihata, Kazuo: *See*—
Kawai, Sumio; Nagasawa, Kazumasa; and Kishihata, Kazuo, 4,608,766, Cl. 34-57.00A.

Kit, Malon; and Kit, Saul, to Novagene, Ltd.; and Baylor College of Medicine. Vaccines for pseudorabies disease and methods for use of same. 4,609,548, Cl. 424-89.000.

Kit, Saul: *See*—
Kit, Malon; and Kit, Saul, 4,609,548, Cl. 424-89.000.

Kitagawa Industries Co., Ltd.: *See*—
Matsui, Kazuhiro, 4,609,171, Cl. 248-74.300.

Kitahara, Kenichi: *See*—
Yamazaki, Toshiaki; Nakadate, Takanori; Kitahara, Kenichi; Kobayashi, Morio; Fujimori, Noboru; and Shimosaki, Ryuji, 4,609,617, Cl. 430-535.000.

Kitano, Kisei; Ogawa, Tetsuya; Goto, Yasuyuki; and Yoshida, Naoyuki, to Chisso Corporation. Bipyrimidinyl derivatives. 4,609,485, Cl. 252-299.610.

Kitayama, Seishi; Yato, Fumihiro; and Kuramatsu, Akira, to Kokusai Denshin Denwa Co., Ltd. Voice encoding and decoding device. 4,610,022, Cl. 381-36.000.

Kitchen, George H., III. Fuel additive. 4,609,379, Cl. 44-63.000.

Kittell, David H. Flexure. 4,609,302, Cl. 403-53.000.

Kiyomiya, Masaaki: *See*—
Ishibashi, Masaya; Kiyomiya, Masaaki; and Kanda, Jun, 4,610,008, Cl. 369-34.000.

Klein, Joseph T.: *See*—
Davis, Larry; and Klein, Joseph T., 4,609,658, Cl. 514-253.000.

Klein, Klaus W.: *See*—
Romer, Rudolf; Boecker, Juergen; Klein, Klaus W.; Gersbach, Klaus; Winkelmann, Jurgen; and Rossmann, Winfried, 4,608,927, Cl. 102-521.000.

Kline, Joseph M. Dental apparatus for removing crowns. 4,609,353, Cl. 433-159.000.

Klocker, Heinz. Device for producing a fabric edge provided with a binding (whip edge). 4,609,015, Cl. 139-54.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Stadler, Hans, 4,608,947, Cl. 123-41.390.

Kloeckner Ferromatik Desma GmbH: *See*—
Stengelin, Ernst, 4,608,724, Cl. 12-17.00R.

Kloster, Kenneth D. Power driven tube cutter. 4,608,754, Cl. 30-92.000.

Klukowski, Chester; and Lysic, Richard, to Flint & Walling, Inc. Spline checking fixture. 4,608,862, Cl. 73-162.000.

Knaebel, Horst. Progressive distributor for lubricants. 4,609,073, Cl. 184-7.400.

Knapp, John F.; Gruber, Robert J.; Floyd, Lawrence, Jr.; and Bolte, Steven B., to Xerox Corporation. Process for achieving consistent high quality images with magnetic developer composition. 4,609,603, Cl. 430-39.000.

Knifton, John F.; Lin, Jiang-Jen; and Grice, Neal J., to Texaco Inc. Process for synthesis of ethylene glycol from synthesis gas plus 1,3-dioxolane using 1,3-dioxolane as a solvent. 4,609,768, Cl. 568-866.000.

Knipp, Russell: *See*—
Paris, Win S.; and Knipp, Russell, 4,609,193, Cl. 272-145.000.

Knopp, Greggory I.: *See*—
Rockett, Luann T.; Nielsen, David A.; Shipp, Peter W., Jr.; and Knopp, Greggory I., 4,609,580, Cl. 428-198.000.

Kobayashi, Masafumi: *See*—
Taketani, Toshinobu; Ota, Minoru; Kobayashi, Masafumi; and Kato, Kazuo, 4,609,093, Cl. 198-378.000.

Kobayashi, Morio: *See*—
Yamazaki, Toshiaki; Nakadate, Takanori; Kitahara, Kenichi; Kobayashi, Morio; Fujimori, Noboru; and Shimosaki, Ryuji, 4,609,617, Cl. 430-535.000.

Kobayashi, Takashi; and Mizuhara, Masaru, to Kabushiki Kaisha Kuken. Impact wrench for tightening to a desired level. 4,609,089, Cl. 192-138.000.

Kobel, Alfons; Damm, Norbert; Geiger, Werner; and Muller, Gunter, to BMD Badische Maschinenfabrik Durlach GmbH. Apparatus for compacting foundry mold making materials. 4,609,033, Cl. 164-169.000.

Koch, Werner L., to Implanto-Lock GmbH. Enossal implant for securing a tight-fitting tooth replacement. 4,609,354, Cl. 433-173.000.

Kocsis, Alexandre: *See*—
Toth, Ottilia F.; and Kocsis, Alexandre, 4,609,567, Cl. 427-74.000.

Koehler, Gerard, to La Telemecanique Electrique. Polarized electromagnet having three states and a control circuit for said electromagnet. 4,609,899, Cl. 335-230.000.

Koerner, Gotz: *See*—
Giesing, Herbert; Koerner, Gotz; Kropac, Vaclay; Patzke, Hans-Jurgen; Quilitsch, Herbert; Rau, Harald; Schamberg, Eckehard; Spieker, Fritz; and Weitemeyer, Christian, 4,609,752, Cl. 556-457.000.

Koerte, Klaus, to Sandoz Ltd. 5-C_{1-4}alkoxy-2-C_{1-2}alkyl-2',4'-dinitro-6'-halo-4-substituted amino-azobenzenes. 4,609,727, Cl. 534-858.000.

Kogure, Tsuneo; Tsuchiyama, Yuji; Amano, Tadashi; Takahashi, Hideaki; Sekita, Katsuji; and Akami, Ichio, to Amada Company, Limited. Press machine. 4,608,852, Cl. 72-389.000.

Koh, Yun Bai; Chien, Frank; and Vora, Madhu, to Fairchild Camera & Instrument Corporation. Self-aligned metal silicide process for integrated circuits having self-aligned polycrystalline silicon electrodes. 4,609,568, Cl. 427-85.000.

Kohashi, Yasuji; Ishiwatari, Toshio; and Fujita, Hisanori, to Mitsubishi Monsanto Chemical Co., Ltd.; and Mitsubishi Chemical Industries, Ltd. Liquid-phase epitaxial growth method of a IIIb-Vb group compound. 4,609,411, Cl. 148-171.000.

Kohayakawa, Yoshimi, to Canon Kabushiki Kaisha. Method of and apparatus for measuring refractive characteristics. 4,609,287, Cl. 356-124.000.

Kohn, Leonard D.; Valente, William A.; Grollman-Wolff, Evelyn F.; Aloj, Salvatore M.; and Vitti, Paolo, to Interthyr Research Foundation Inc.; and University of Maryland, The. Clinical determination and/or quantification of thyrotropin and a variety of thyroid stimulatory or inhibitory factors performed in vitro with an improved thyroid cell line, FRTL-5. 4,609,622, Cl. 435-29.000.

Kohno, Atsuo; Shiiba, Minoru; and Kikuchi, Eishiroh, to Fuji Photo Film Co., Ltd. Camera with interchangeable taking lenses. 4,609,270, Cl. 354-195.120.

Koike, Hideharu, to Kabushiki Kaisha Toshiba. CMOS transmission circuit. 4,609,836, Cl. 307-451.000.

Koike, Hideharu, to Tokyo Shibaura Denki Kabushiki Kaisha. Input protection MOS semiconductor device with zener breakdown mechanism. 4,609,931, Cl. 357-23.130.

Koishi, Toshio; Ishihara, Akira; Fuchigami, Takamasa; and Ojima, Iwao, to Central Glass Company, Limited. Copolymer of fluoromethacrylate with styrene or its derivative and method of preparing same. 4,609,715, Cl. 526-245.000.

Koivunen, Erkki A., to General Motors Corporation. Multi-range continuously variable power transmission. 4,608,885, Cl. 74-689.000.

Koizumi, Yasuhiro: *See*—
Hongo, Mikio; Mizukoshi, Katsurou; Miyauchi, Tateoki; Kawanabe, Takao; and Koizumi, Yasuhiro, 4,609,566, Cl. 427-53.100.

Koizumi, Yoshihito: *See*—
Yuda, Mitsuharu; Sakka, Hiroshi; Yamada, Kenichi; Koizumi, Yoshihito; and Yamaguchi, Takeshi, 4,609,560, Cl. 426-653.000.

Kojima, Kenji: *See*—
Deguchi, Hirokazu; Kojima, Kenji; and Mogami, Takao, 4,609,267, Cl. 351-163.000.

Kokusai Denshin Denwa Co., Ltd.: *See*—
Kitayama, Seishi; Yato, Fumihiro; and Kurematsu, Akira, 4,610,022, Cl. 381-36.000.

Kolakowski, Thomas A.: *See*—
Vishnevsky, Constantine; and Kolakowski, Thomas A., 4,609,029, Cl. 164-122.000.

Kollar, James. Lathe for cutting wooden spindles. 4,608,889, Cl. 82-14.00R.

Kollmeier, Hans-Joachim; Langenhagen, Rolf-Dieter; and Hoffmann, Klaus, to Th. Goldschmidt AG. Siloxanes with betaine groups, their synthesis and use in hair care products. 4,609,750, Cl. 556-419.000.

Koltermann, Jurgen: *See*—
Mayer, Eberhard; Mohilo, Oskar; and Koltermann, Jurgen, 4,608,872, Cl. 73-862.230.

Komatsu, Teruo: *See*—
Nakaoka, Masaki; Komatsu, Teruo; and Goto, Shinji, 4,609,251, Cl. 350-6.800.

Komatsubara, Masahiro; Kamimura, Tetsuro; Inanaga, Takugi; and Takahashi, Akira, to Pioneer Electronic Corporation. Cassette tape machine. 4,609,164, Cl. 242-199.000.

Komatsubara, Yoshiaki: *See*—
Harada, Nozomu; and Komatsubara, Yoshiaki, 4,608,749, Cl. 29-572.000.

Komline-Sanderson Engineering Corporation: *See*—
Morales, Ramon A., 4,609,467, Cl. 210-396.000.

Konagai, Shigetoshi, to Yasui Sangyo, Ltd. Silencer for a pneumatically driven hydraulic jack. 4,609,069, Cl. 181-230.000.

Kondo, Hideyuki, to NEC Corporation. Semiconductor device with an improved crossing structure at the intersection of a resistor region and a wiring conductor. 4,609,935, Cl. 357-51.000.

Kondoh, Kazuaki, to Sumitomo Rubber Industries, Ltd. Automatic sipe forming machine. 4,609,026, Cl. 157-13.000.

Konig, Klaus: *See*—
Weber, Christian; Konig, Klaus; and Schmidt, Manfred, 4,609,682, Cl. 521-117.000.

Konishi, Takeshi: *See*—
Maeda, Tatsuo; and Konishi, Takeshi, 4,608,779, Cl. 49-374.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Katoh, Katsunori; and Nakagawa, Satoshi, 4,609,619, Cl. 430-553.000.
Nozu, Taketo; Kimura, Yoshiaki; and Tanaka, Yasuhiko, 4,609,925, Cl. 346-1.100.
Sasaki, Masao; and Onodera, Kaoru, 4,609,618, Cl. 430-546.000.
Yamazaki, Toshiaki; Nakadate, Takanori; Kitahara, Kenichi; Kobayashi, Morio; Fujimori, Noboru; and Shimosaki, Ryuji, 4,609,617, Cl. 430-535.000.

Konotsune, Shiro: *See*—
Kunimune, Kouichi; and Konotsune, Shiro, 4,609,700, Cl. 524-104.000.

Koor Metals Ltd.: *See*—
Masel, Ruben; and Valdshtein, George, 4,609,333, Cl. 417-393.000.

Kooy, Hermen. Cabinet for cut-off flowers. 4,608,776, Cl. 47-58.000.

Kooy, Hermen. Cabinet for cooling goods, etc. 4,608,835, Cl. 62-255.000.

Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, to C. H. Boehringer Sohn. 1-(Alkanoylamino-aryloxy)-2-hydroxy-3-(alkinyl-amino)-propanes and salts thereof. 4,609,672, Cl. 514-522.000.

Kornberger, Otto: *See*—
Eberlein, Helmut; and Kornberger, Otto, 4,608,790, Cl. 52-81.000.

Kosmider, Ronald T.: *See*—
Parks, Dale B.; and Kosmider, Ronald T., 4,608,737, Cl. 29-110.000.

Kosson, Robert; Bilenas, Jonas; Attard, Salvatore; and Hilgeman, Theodore, to Grumman Aerospace Corporation. Infrared camouflage system. 4,609,034, Cl. 165-1.000.

Kot, Kenneth M.: *See*—
Brandyberry, Dennis R.; and Kot, Kenneth M., 4,608,817, Cl. 57-213.000.

Kotzsch, Hans-Joachim; and Vahlensieck, Hans-Joachim, to Dynamit Nobel AG. Method for the simultaneous preparation of carboxylic acid trimethylsilyl esters and silylated carboxylic acid amides. 4,609,749, Cl. 556-411.000.

Koubek, Michael G.: *See*—
Shimrock, Thomas; Rosynsky, Victor; Caridi, Theodore M.; Collins, John M.; and Koubek, Michael G., 4,609,563, Cl. 427-8.000.

Kountz, Kenneth J., to Borg-Warner Corporation. Self-optimizing, capacity control system for inverter-driven centrifugal compressor based water chillers. 4,608,833, Cl. 62-228.100.

Koval, Nikolai P.: *See*—
Scheglov, Jury A.; Koval, Nikolai P.; Furer, Leonid A.; Zargarian, Sergei Y.; Skimbov, Anatoly A.; Belik, Vladimir G.; Zharik, Boris N.; Papchenko, Andrei Y.; Ryabinsky, Filipp G.; Sergeev, Alexandr S., deceased; and Sergeeva, Galina A., administrator, 4,608,920, Cl. 99-451.000.

Kozawa, Kunio; Ishikawa, Soichi; and Yoshida, Mamoru, to Toyota Jidosha Kabushiki Kaisha. Method of and apparatus for automatically correcting position of TV camera. 4,609,939, Cl. 358-101.000.

Kozuka, Hirotsugu: *See*—
Masao, Tamura; Kozuka, Hirotsugu; Wada, Yasuo; Ohkura, Makoto; Hiroshi, Tamura; Tokuyama, Takashi; Okabe, Takahiro; Minato, Osamu; and Ohba, Shinya, 4,609,407, Cl. 148-1.500.

Kozuka, Kazuhiro: *See*—
Fujikawa, Taketoshi; and Kozuka, Kazuhiro, 4,609,262, Cl. 350-432.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Goebel, Konrad; Muller, Rainer; and Schiffers, Ulrich, 4,608,818, Cl. 60-39.120.

Krause, Frank W. Lingual retainer and methods of manufacturing and bonding same. 4,609,350, Cl. 433-7.000.

Kremheller, Herrmann: *See*—
Schroder, Paul; Schroder, Klaus J.; and Kremheller, Herrmann, 4,609,345, Cl. 432-137.000.

Krenitsky, Thomas A., to Burroughs Wellcome Co. Method for using purine derivatives. 4,609,662, Cl. 514-262.000.

Krent, Edward D.; and Paffett, Nicholas B. Vibration dampening device for sporting rackets. 4,609,194, Cl. 273-73.00D.

Krenzer, Eberhard: *See*—
Moore, George F., Jr.; and Krenzer, Eberhard, 4,608,814, Cl. 57-7.000.

Kretchmer, Richard A.: *See*—
Tolpin, Thomas W.; and Kretchmer, Richard A., 4,609,537, Cl. 423-244.000.

Krishnakumar, Suppayan M.; and Nahill, Thomas E., to Continental Pet Technologies, Inc. Method of forming laminated preforms. 4,609,516, Cl. 264-255.000.

Kristanek, Henri; and Degrange, Pierre, to ITT Industries, Inc. Electrical slide switching device. 4,609,793, Cl. 200-16.00D.

Kristofek, Paul, to Cooper Industries, Inc. Swivel assembly. 4,609,979, Cl. 362-427.000.

Kronenberg, Stanley, to United States of America, Army. Protection of radiation detectors from fast neutron damage. 4,609,520, Cl. 376-153.000.

Kropac, Vaclay: *See*—
Giesing, Herbert; Koerner, Gotz; Kropac, Vaclay; Patzke, Hans-Jurgen; Quilitsch, Herbert; Rau, Harald; Schamberg, Eckehard; Spieker, Fritz; and Weitemeyer, Christian, 4,609,752, Cl. 556-457.000.

Krug, William: *See*—
Fischer, Wolfgang; and Krug, William, 4,609,511, Cl. 264-51.000.

Kruger, Bernd-Wieland: *See*—
Hoffmann, Hellmut; Kruger, Bernd-Wieland; and Behrenz, Wolfgang, 4,609,646, Cl. 514-77.000.

Kruger, E. William: *See*—
Aleem, Mohd A.; Flygare, Wayne A.; and Kruger, E. William, 4,609,842, Cl. 310-112.000.

Kruishoop, Johan C. W.; Legierse, Petrus E. J.; Van Ruler, Johannes; and Broer, Dirk J., to U.S. Philips Corporation. Method of manufac-

turing an optical fiber comprising a coating of a metal. 4,609,437, Cl. 204-28.000.

Krumrein, Gerhard: *See*—
Dermitzakis, Stephan; Suri, Jasbeer S.; Krumrein, Gerhard; and Mischel, Peter, 4,609,880, Cl. 330-308.000.

Kubo, Keishi; Takigawa, Nobuhiro; and Kawamura, Eiichi, to Ricoh Company, Ltd. Thermosensitive image transfer medium. 4,609,928, Cl. 346-208.000.

Kubota, Ltd.: *See*—
Ishida, Mikio; Ishimori, Shoso; Nakamura, Hagime; and Ushiro, Kenzo, 4,608,879, Cl. 74-474.000.
Shikiya, Hajime; Miki, Hiroyuki; Nakata, Yasuo; Hirata, Kazuo; and Ishiizumi, Seiichi, 4,609,065, Cl. 180-261.000.

Kudo, Yukinori: *See*—
Suzuki, Susumu; and Kudo, Yukinori, 4,609,938, Cl. 358-26.000.

Kuhl, David K.: *See*—
Rothfuss, Robert G.; and Kuhl, David K., 4,608,981, Cl. 128-305.000.

Kuhn, Falk: *See*—
Buck, Alfred; and Kuhn, Falk, 4,608,841, Cl. 66-104.000.

Kuhn, Jakob: *See*—
Rohr, Thomas-Markus; and Kuhn, Jakob, 4,609,609, Cl. 430-146.000.

Kuisma, Heikki, to Vaisala Oy. Absolute pressure transducer. 4,609,966, Cl. 361-283.000.

Kukes, Simon; and Banks, Robert L., to Phillips Petroleum Company. Olefin conversion. 4,609,769, Cl. 585-646.000.

Kukes, Simon G.; and Hawley, Gil R., to Phillips Petroleum Company. Demetallization of hydrocarbon containing feed streams. 4,609,638, Cl. 502-208.000.

Kula, Maria-Regina: *See*—
Leuchtenberger, Wolfgang; Hummel, Werner; Kula, Maria-Regina; and Schutte, Horst, 4,609,623, Cl. 435-130.000.

Kulman, James: *See*—
Guha, Subhendu; and Kulman, James, 4,609,771, Cl. 136-249.000.

Kumar, Mahesh, to RCA Corporation. Microwave frequency power combiner. 4,609,889, Cl. 333-100.000.

Kume, Toyohiko; Kurahashi, Yoshio; Isono, Kunihiro; Sakawa, Shinji; and Matsumoto, Noboru, to Nihon Tokushu Noyaku Seizo K.K. Carbamoylimidazole derivatives and fungicidal use thereof. 4,609,669, Cl. 514-399.000.

Kummer, David A., to International Business Machines Corporation. Memory access system for a computer system adapted to accept a memory expansion module. 4,609,996, Cl. 364-900.000.

Kummer, Werner: *See*—
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, 4,609,672, Cl. 514-522.000.

Kunimune, Kouichi; and Konotsune, Shiro, to Chisso Corporation. Soluble imide oligomer and a method for producing the same. 4,609,700, Cl. 524-104.000.

Kunio, Kato: *See*—
Masataka, Mori; Tatsuji, Chuman; Kunio, Kato; and Mikio, Ono, 4,609,764, Cl. 568-384.000.

Kupcikevicius, Vytautas; and Raudys, Vytas A., to Viskase Corporation. Disposable tension sleeve for a stuffing machine. 4,608,730, Cl. 17-41.000.

Kurahashi, Yoshio: *See*—
Kume, Toyohiko; Kurahashi, Yoshio; Isono, Kunihiro; Sakawa, Shinji; and Matsumoto, Noboru, 4,609,669, Cl. 514-399.000.

Kurematsu, Akira: *See*—
Kitayama, Seishi; Yato, Fumihiro; and Kurematsu, Akira, 4,610,022, Cl. 381-36.000.

Kuribayashi, Michio, to Fuji Photo Film Co., Ltd. Method for conversion from field signal to frame signal. 4,609,942, Cl. 352-140.000.

Kurimoto, Ltd.: *See*—
Ishikawa, Hiroshi; Oguro, Keisuke; Suzuki, Hiroshi; Kato, Akihiko; Okada, Teruya; Sakamoto, Shizuo; Nishimura, Iwao; and Sakaguchi, Keizo, 4,609,038, Cl. 165-104.120.

Kurita, Masaya: *See*—
Yamamoto, Hitoshi; and Kurita, Masaya, 4,609,854, Cl. 318-471.000.

Kurokawa, Shigeki: *See*—
Nogimori, Katsumi; Tamura, Makoto; Kurokawa, Shigeki; and Yajima, Motoyuki, 4,609,549, Cl. 424-92.000.
Ohishi, Yoshitaka; Nagahara, Michiko; Takehisa, Yoshitaka; Yajima, Motoyuki; Kurokawa, Shigeki; Kajikawa, Norio; and Itoh, Akira, 4,609,736, Cl. 548-183.000.

Kusano, Chushirou; Ishioka, Sachio; Shimomoto, Yasuharu; Imamura, Yoshinori; and Ogawa, Hirofumi, to Hitachi, Ltd. Image pick-up tube having collector and balance electrodes. 4,609,846, Cl. 313-384.000.

Kutaragi, Ken, to Sony Corporation. Magnetic disc reproducing apparatus. 4,609,949, Cl. 360-28.000.

Kuttruff, Manfred: *See*—
Turner, Larry G.; Stanish, Leo S.; Kuttruff, Manfred; Budzinski, Walter J.; and MacDonald, Robert, 4,609,177, Cl. 251-175.000.

Kvita, Vratislav: *See*—
Darms, Roland; Kvita, Vratislav; and Monnier, Charles E., 4,609,741, Cl. 549-241.000.

Kyle, Robert L.; and Cardis, Donald R., to Schneller, Inc. Process for producing decorative coverings for substrates. 4,609,514, Cl. 264-153.000.

La Telemecanique Electrique: *See*—
Koehler, Gerard, 4,609,899, Cl. 335-230.000.

Laaksonen, Markku: *See*—
Huhtala, Esko; Laaksonen, Markku; Vaho, Matti; Karttunen, Johannes; and Eklund, Gosta, 4,610,029, Cl. 383-10.000.

Labbe, Roland; and Quistrebert, Jean-Luc, to Alsthom-Atlantique. Apparatus for enabling a self-contained submersible module including a length of conduit for connection to a collector to be repetitively put into place and removed. 4,609,304, Cl. 405-170.000.

Labbe, Roland. Universal coupling between a first rotary shaft and a second rotary shaft. 4,609,364, Cl. 464-112.000.

Labeeuw, Bernard; and Salhi, Ali, to Sanofi. Derivatives of cephalosporins substituted in 3 position by a thiomethyl heterocycle group; and pharmaceutical compositions containing them. 4,609,654, Cl. 514-206.000.

La Fiandra, Carlo, to Perkin-Elmer Corporation, The. X-ray mask ring and apparatus for making same. 4,610,020, Cl. 378-35.000.

Lake, Connie, to S. Eisenberg & Co., Div. of Creative Industries, Inc. Fragile article carton with top having resilient article engaging fingers. 4,609,141, Cl. 229-2.5EC.

Lale, Peter G.; and Hocking, Donald H., to Hocking Electronics Limited. Lift off compensation of eddy current crack detection system by controlling damping resistance of oscillator. 4,609,870, Cl. 324-225.000.

Lamey, Robert E.: *See*—
Lehmann, Werner K.; Lamey, Robert E.; and Lehmann, Karl, 4,608,844, Cl. 72-43.000.

Lampley, Nancy. Quilting or sewing guide. 4,608,939, Cl. 112-260.000.

Langenhagen, Rolf-Dieter: *See*—
Kollmeier, Hans-Joachim; Langenhagen, Rolf-Dieter; and Hoffmann, Klaus, 4,609,750, Cl. 556-419.000.

Lanham Machinery Company, Inc.: *See*—
Lanham, William E., Jr.; and Smith, Stephen R., 4,608,961, Cl. 126-21.00A.

Lanham, William E., Jr.; and Smith, Stephen R., to Lanham Machinery Company, Inc. Exhaust damper control. 4,608,961, Cl. 126-21.00A.

Lantz, Paul W.: *See*—
Rhodes, James; Wren, Michael; Lantz, Paul W.; and Acock, George W., Jr., 4,608,785, Cl. 52-2.000.

Larsen, Leonard O.: *See*—
Spencer, Donald J.; and Larsen, Leonard O., 4,609,801, Cl. 219-10.55R.

Larsson, Hans: *See*—
Linnarsson, Dag; and Larsson, Hans, 4,608,995, Cl. 128-713.000.

Lattrell, Rudolf: *See*—
Durckheimer, Walter; and Lattrell, Rudolf, 4,609,653, Cl. 514-202.000.

Lau, Frederick L.: *See*—
Lavigne, Vernon W.; Rosborough, Keith A.; and Lau, Frederick L., 4,609,795, Cl. 200-61.190.

Lau, Hon C., to Shell Oil Company. Alkali-enhanced steam foam oil recovery process. 4,609,044, Cl. 166-270.000.

Lauer, Leonard; and Spiegel, Susan, to United Utensils Corporation. Plastic container and handling assembly. 4,609,120, Cl. 220-69.000.

Laurent, Jean: *See*—
Layotte, Pierre-Claude; Laurent, Jean; and James, Andre , 4,609,066, Cl. 181-121.000.

Laurien, Rolf: *See*—
Mateika, Dieter W.; and Laurien, Rolf, 4,609,425, Cl. 156-617.0SP.

Lauterbach-Dammler, Inge: *See*—
Hill, Derek; Lauterbach-Dammler, Inge; Taube, Tom; and Zollner, Dieter, 4,610,015, Cl. 373-93.000.

Lavigne, Vernon W.; Rosborough, Keith A.; and Lau, Frederick L., to Switchcraft, Inc. Vibration protected switch. 4,609,795, Cl. 200-61.190.

Layotte, Pierre-Claude; Laurent, Jean; and James, Andre , to Institut Francais du Petrole; and Compagnie Generale de Geophysique. Mixed device for generating longitudinal or shear waves. 4,609,066, Cl. 181-121.000.

Lazecky, H. Peter: *See*—
Ramachandran, Pallassana N.; Schramm, Charles J., Jr.; Lazecky, H. Peter; and Reinish, Martin D., 4,609,473, Cl. 252-8.600.

Leach, Steven C.: *See*—
Frese, Karl W., Jr.; Leach, Steven C.; and Summers, David P., 4,609,440, Cl. 204-76.000.
Frese, Karl W., Jr.; Leach, Steven C.; and Summers, David P., 4,609,441, Cl. 204-77.000.

LeBlanc, Helmut: *See*—
Bohm, Siegfried; LeBlanc, Helmut; and Wedemeyer, Karlfried, 4,609,760, Cl. 564-402.000.

Lee, Hyok: *See*—
Lee, Ki S.; Kim, Song J.; Lee, Hyok; and Lee, Kwang U., 4,608,894, Cl. 83-322.000.

Lee, Ki S.; Kim, Song J.; Lee, Hyok; and Lee, Kwang U. Adhesive tape-cutting device. 4,608,894, Cl. 83-322.000.

Lee, Kwang U.: *See*—
Lee, Ki S.; Kim, Song J.; Lee, Hyok; and Lee, Kwang U., 4,608,894, Cl. 83-322.000.

Lee, Len F., to Monsanto Company. Substituted 4,6-alkoxy pyridinecarboxylate compounds and herbicidal use. 4,609,399, Cl. 71-94.000.

Lee, Robert D., to Thomson Components-Mostek Corporation. ROM/-RAM/ROM patch memory circuit. 4,610,000, Cl. 365-189.000.

Lee, Steven R.: *See*—
Wheeler, William R.; and Lee, Steven R., 4,609,037, Cl. 165-61.000.

Leenhouts, Frans; and de Zwart, Maarten, to U.S. Philips Corporation. Liquid crystal display with twist angle less than 80 degrees. 4,609,255, Cl. 350-341.000.

Lees, Barry A.; Flanagan, Robert J.; and Hordon, Monroe J., to Xerox Corporation. Multi-layered imaging member comprising selenium and tellurium. 4,609,605, Cl. 430-58.000.

Legierse, Petrus E. J.: *See—*
Kruishoop, Johan C. W.; Legierse, Petrus E. J.; Van Ruler, Johannes; and Broer, Dirk J., 4,609,437, Cl. 204-28.000.

Legris: *See—*
Levenez, Yves; and Legris, Andre , 4,608,910, Cl. 91-409.000.

Legris, Andre : *See—*
Levenez, Yves; and Legris, Andre , 4,608,910, Cl. 91-409.000.

Lehmann, Karl: *See—*
Lehmann, Werner K.; Lamey, Robert E.; and Lehmann, Karl, 4,608,844, Cl. 72-43.000.

Lehmann, Werner K.; Lamey, Robert E.; and Lehmann, Karl, to Sesco, Inc. Cradle straightener feeder. 4,608,844, Cl. 72-43.000.

Leiber, Heinz: *See—*
Huber, Werner; and Leiber, Heinz, 4,608,870, Cl. 73-708.000.

Leinfellner, Herwig: *See—*
Okubo, Kiyokazu; Guss, Walter; and Leinfellner, Herwig, 4,608,877, Cl. 74-473.00R.

Leithauser, Horst: *See—*
Rigler, Josef K.; Reese, Dirk; and Leithauser, Horst, 4,609,512, Cl. 264-53.000.

LeMieux, David M.; Dodenhoff, John A., deceased (Dodenhoff, Maxine S., executor); and by Papitto, Ralph, executor, to B & W Electronic Enclosures, Inc. Electrical terminal construction with fusible section. 4,609,774, Cl. 174-152.0GM.

Lemo M. Lehmacher & Sohn GmbH Maschinenfabrik: *See—*
Ley, Willy; and Stasiak, Gunter, 4,609,366, Cl. 493-22.000.

Lemont Machine Company: *See—*
Rathbun, Melvin R., 4,608,846, Cl. 72-111.000.

Leng, Barry: *See—*
Carmen, Raleigh A.; Chong, Chiyong; and Leng, Barry, 4,609,372, Cl. 604-262.000.

Lenherr, Harald; and Deutschlander, Gert, to SIG Schweizerische Industrie-Gesellschaft. Article spacing apparatus. 4,609,095, Cl. 198-460.000.

Lenk, Dennis W., to Harvey Hubbell Incorporated. Arrester support and disconnector structure. 4,609,902, Cl. 337-30.000.

Lenk, Erich: *See—*
Runkel, Walter; Lenk, Erich; and Bauer, Karl, 4,609,344, Cl. 432-59.000.

Lennemann, Eckart; and Ruppert, Werner, to International Business Machines Corporation. Opto-electronic scanning apparatus with rotary plate scanning element. 4,609,818, Cl. 250-234.000.

Lenney, William E.: *See—*
Hausman, Mary L.; Lenney, William E.; and Miller, Gerald D., 4,609,704, Cl. 524-710.000.

Lepp, Wayne: *See—*
Torokvei, Thomas E.; and Lepp, Wayne, 4,609,210, Cl. 285-114.000.

Leprince, Philippe: *See—*
Bloyet, Emile; Leprince, Philippe; and Marec, Jean, 4,609,808, Cl. 219-121.0PR.

Lerner, Cathy M., to Boston University, Trustees of. Single particle detection system. 4,608,869, Cl. 73-644.000.

Les Enterprises Tritton LTEE: *See—*
Chevillard, Paul F.; Tritton, Victor R.; and Tritton, Gary E., 4,609,218, Cl. 292-320.000.

Les Services de Consultation D.B. Plus Limitee: *See—*
Rothlisberger, Henri C., 4,609,624, Cl. 435-157.000.

Leuchtenberger, Wolfgang; Hummel, Werner; Kula, Maria-Regina; and Schutte, Horst, to Degussa AG; and Society for Biotechnical Research. Microbiologically produced D-2-hydroxy-4-methylpentanoic acid dehydrogenase, process for its production and its use. 4,609,623, Cl. 435-130.000.

Leuenberger, Hans, to Glatt Maschinen-und Apparatebau AG. Process of drying a particulate material and apparatus for implementing the process. 4,608,764, Cl. 34-5.000.

Levasseur, Joseph L., to Coin Acceptors, Inc. Encoding keyboard. 4,609,792, Cl. 200-5.00A.

Levenez, Yves; and Legris, Andre , to Legris. Compressed fluid saving device. 4,608,910, Cl. 91-409.000.

Lever, John K.: *See—*
Collura, Peter C.; Humphries, Richard L.; and Lever, John K., 4,609,143, Cl. 229-40.000.

Lewin, Stephen S. Pneumatically operated burrowing tool. 4,609,052, Cl. 173-91.000.

Lexidata Corporation: *See—*
Shen, Tsu Y., 4,609,917, Cl. 340-729.000.

Ley, Willy; and Stasiak, Gunter, to Lemo M. Lehmacher & Sohn GmbH Maschinenfabrik. Apparatus for the manufacture of plastic bags by wave-like incision to define handgrips. 4,609,366, Cl. 493-22.000.

Liautaud, James P.: *See—*
Fasen, Kenneth R., 4,609,860, Cl. 320-14.000.

Liedek, Egon: *See—*
Kemper, Reinhard; and Liedek, Egon, 4,609,726, Cl. 534-760.000.

Ligorati, Ferdinando: *See—*
Canavesi, Roberto; Ligorati, Ferdinando; and Ghezzi, Roberto, 4,609,635, Cl. 502-26.000.

Lilienthal, Gerald W.: *See—*
Muir, Earl B.; Griffith, Russell W.; and Lilienthal, Gerald W., 4,609,334, Cl. 418-55.000.

Lim, Thomas F.: *See—*
Freiberg, Alan L.; Graiver, Daniel; Lim, Thomas F.; and Wright, Antony P., 4,609,486, Cl. 252-310.000.

Lin, Jiang-Jen: *See—*
Knifton, John F.; Lin, Jiang-Jen; and Grice, Neal J., 4,609,768, Cl. 568-866.000.

Lind, Charles F. Device for doing situps. 4,609,188, Cl. 272-93.000.

Lindauer Dornier Gesellschaft mbH: *See—*
Dornier, Peter, 4,608,767, Cl. 34-103.000.

Linde Aktiengesellschaft: *See—*
Karwat, Heinz, 4,609,389, Cl. 62-17.000.
Ranke, Gerhard; and Weiss, Horst, 4,609,384, Cl. 55-40.000.

Linderoth, Gustaf; and Ehn, Borje, to Skaltek AB. Winding device for drawing-in strand materials on a drum. 4,609,160, Cl. 242-54.00R.

Lindner, Daniel J.: *See—*
Fetty, Harold D.; and Lindner, Daniel J., 4,609,022, Cl. 152-209.00R.

Linenmeier, Heinz: *See—*
Flachenecker, Gerhard; Fastenmeier, Karl; and Linenmeier, Heinz, 4,609,879, Cl. 330-276.000.

Link, Helmut F.; and Hafla, Dietmar F., to Index-Werke Komm.-Ges. Hahn & Tessky. Multispindle-automatic turret lathe. 4,608,747, Cl. 29-568.000.

Link, John: *See—*
Blaschke, Marilyn W.; Miller, Richard F.; and Link, John, 4,609,747, Cl. 556-77.000.

Linman, E. Kelly: *See—*
Curro, John J.; Baird, James C.; Gerth, Donald L.; Vernon, George M.; and Linman, E. Kelly, 4,609,518, Cl. 264-504.000.

Linn Products Ltd.: *See—*
Miller, William, 4,609,784, Cl. 179-115.5DV.

Linnarsson, Dag; and Larsson, Hans, to Karolinska Institutet Institutionen for Medicinsk Teknik. Method and apparatus for the non-invasive determination of the minute volume of the heart. 4,608,995, Cl. 128-713.000.

Lipkin, William S., to M. U. Industries, Inc. Baseball cap with elastic hinge. 4,608,721, Cl. 2-172.000.

Lipstein, Norman J.: *See—*
Eats, James V.; Lipstein, Norman J.; and Miller, Edward H., 4,609,840, Cl. 310-58.000.

Liu, Hon, to United Chinese Plastics Products Co. Ltd. Artificial Christmas trees. 4,609,576, Cl. 428-18.000.

Liu, Ping Y.; and Hirt, Robert P., Jr., to General Electric Company. Multilayered structure. 4,609,592, Cl. 428-412.000.

Lo, Peter Y. K.: *See—*
Keryk, John R.; Lo, Peter Y. K.; and Thayer, LeRoy E., 4,609,574, Cl. 427-407.100.

Locher, Anton: *See—*
Bachhofer, Bruno; and Locher, Anton, 4,609,900, Cl. 336-58.000.

Lockheed Missiles & Space Company, Inc.: *See—*
Roche, Aiden E., 4,609,822, Cl. 250-352.000.

Loftness, Marvin O. Electrical systems interference locator. 4,609,866, Cl. 324-52.000.

Logan, Andrew H.; and Graves, John D., to Hughes Helicopters, Inc. Helicopter auxiliary energy system. 4,609,165, Cl. 244-17.190.

Loire, Rene , to Morrison-Knudsen Company, Inc. Ice-breaking offshore drilling and production structure. 4,609,306, Cl. 405-196.000.

Long, Charles E.: *See—*
Ivey, James H., 4,608,902, Cl. 83-875.000.

Long, James R.; and Harrill, Roy L., to Avco Corporation. Remote multiplexer terminal with redundant central processor units. 4,610,013, Cl. 371-9.000.

Long, W. Herbert, to Armco Inc. Method of producing weld overlay of austenitic stainless steel. 4,609,577, Cl. 428-683.000.

Long, William E.: *See—*
Postle, Stephen R.; and Long, William E., 4,609,620, Cl. 430-554.000.

Lonza Ltd.: *See—*
Quarroz, Daniel, 4,609,734, Cl. 546-290.000.

Lorke, Horst: *See—*
Ritschel, Werner; and Lorke, Horst, 4,609,531, Cl. 422-13.000.

Lorosch, Hans-Karl: *See—*
Bayer, Oswald; Grehn, Martin; Hey, Edwin; Lorosch, Hans-Karl; and Vogel, Walter, 4,609,293, Cl. 384-469.000.

Loser, Robert P., to Goodyear Tire & Rubber Company, The. Pneumatic tire with sidewall insert. 4,609,023, Cl. 152-454.000.

Lothrop, John R.: *See—*
Franklin, Andrew D.; Lothrop, John R.; and Wiidakas, John D., 4,609,778, Cl. 179-2.0DP.

Lotz, Daniel E.: *See—*
Breidenthal, Robert E.; Lotz, Daniel E.; and Russell, David A., 4,608,979, Cl. 128-303.100.

Loucks, Harry D. Folding chair with membrane shell. 4,609,225, Cl. 297-440.000.

LRD, Inc: *See—*
Delise, Fred, 4,608,794, Cl. 52-288.000.

Lu, Chun C.: *See—*
Miller, William J.; and Lu, Chun C., 4,609,788, Cl. 179-170.600.

Lucas Industries public limited company: *See—*
McCann, Denis J., 4,609,230, Cl. 303-52.000.

Ludwig, Clifford J., to Drackett Company, The. Safety closure cap. 4,609,121, Cl. 220-234.000.

Ludwig Riedhammer GmbH: *See—*
Schroder, Paul; Schroder, Klaus J.; and Kremheller, Herrmann, 4,609,345, Cl. 432-137.000.

Luk Lamellen und Kupplungsbau GmbH: *See—*
Vogel, Manfred, 4,609,086, Cl. 192-70.270.

Lunsford, Carl D.; and Chen, Ying-Ho, to A. H. Robins Company, Inc. Certain aryloxy-4-chloro-2-butanol intermediates. 4,609,735, Cl. 546-302.000.

Lunt, Audrey T. Disposable medical cover gown. 4,608,719, Cl. 2-114.000.

Lysic, Richard: *See*—
Klukowski, Chester; and Lysic, Richard, 4,608,862, Cl. 73-162.000.

M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See*—
Mikota, Thomas I., 4,608,828, Cl. 60-606.000.

M.C.L. Co., Ltd.: *See*—
Sasaki, Nobuyoshi, 4,609,031, Cl. 164-270.100.

M&T Chemicals Inc.: *See*—
Edelman, Robert; and Collins, William R., 4,609,569, Cl. 427-93.000.

M. U. Industries, Inc.: *See*—
Lipkin, William S., 4,608,721, Cl. 2-172.000.

Maa, Jen-shen: *See*—
White, Lawrence K.; and Maa, Jen-shen, 4,609,447, Cl. 204-192.00E.

Mabry, Melinda A.; Prichard, William W.; and Ziemecki, Stanislaw B., to Du Pont de Nemours, E. I., and Company. Pd/Re hydrogenation catalyst for making tetrahydrofuran and 1,4-butanediol. 4,609,636, Cl. 502-183.000.

Mac Incorporated: *See*—
Okamura, Itsuji; Matushita, Hiroaki; and Murata, Kiyoshi, 4,609,458, Cl. 210-85.000.

MacCracken, Calvin D.; MacCracken, Mark M.; and Silvetti, Brian M., to Calmac Manufacturing Corporation. Multi-mode off-peak storage heat pump. 4,608,836, Cl. 62-325.000.

MacCracken, Mark M.: *See*—
MacCracken, Calvin D.; MacCracken, Mark M.; and Silvetti, Brian M., 4,608,836, Cl. 62-325.000.

MacDonald, Clyde O., to Halliburton Company. Automatic control system for acoustic logging. 4,610,006, Cl. 367-65.000.

MacDonald, Robert: *See*—
Turner, Larry G.; Stanish, Leo S.; Kuttruff, Manfred; Budzinski, Walter J.; and MacDonald, Robert, 4,609,177, Cl. 251-175.000.

Macevicz, Clement C.; and Mulherin, Byron J., Jr., to Nimbus Water Systems, Inc. Water purification device. 4,609,463, Cl. 210-238.000.

Machida, Tetsuo: *See*—
Tabata, Kuniaki; Machida, Tetsuo; Takeda, Haruo; Takada, Naoki; and Okada, Yasuyuki, 4,610,026, Cl. 382-47.000.

Mackay, Donald A. M.: *See*—
Morris, William M.; Witzel, Frank; Puglia, Wayne J.; Mackay, Donald A. M.; Clark, K. Warren; and Patanasinth, Kanit J., 4,609,543, Cl. 424-38.000.

MacLeod Laboratories, Inc.: *See*—
Wachtler, William J.; and Yang, Thomas M., 4,608,861, Cl. 73-151.000.

Madsen, John E.: *See*—
Becker, Robert W.; Keck, Timothy A.; and Madsen, John E., 4,609,862, Cl. 322-90.000.

Maeda, Chiaki: *See*—
Hisamoto, Iwao; Maeda, Chiaki; and Nishiwaki, Mitsuhiro, 4,609,489, Cl. 252-355.000.

Maeda, Tatsuo; and Konishi, Takeshi, to Mazda Motor Corporation. Automobile door assembly. 4,608,779, Cl. 49-374.000.

Maekawa, Yoshitaka: *See*—
Fukuhara, Mikio; and Maekawa, Yoshitaka, 4,609,633, Cl. 501-97.000.

Magda, Richard M. Well hot oil system. 4,609,041, Cl. 166-62.000.

Magee, Mark R.: *See*—
Miller, G. Kirby; Trimble, Melvin E.; and Magee, Mark R., 4,609,909, Cl. 340-541.000.

Magida, Nathan H.: *See*—
DeKoster, Heinz; Edelman, Oscar; and Magida, Nathan H., 4,609,897, Cl. 335-133.000.

Magnetic Technologies Corp.: *See*—
Parks, Dale B.; and Kosmider, Ronald T., 4,608,737, Cl. 29-110.000.

Magyar, Arpad M.; Newsome, James G.; and Patton, Darrell W., to Pennzoil Company. Rust conversion coatings. 4,609,406, Cl. 134-2.000.

Mahoney, Thomas P.: *See*—
Campbell, James R., 4,608,845, Cl. 72-44.000.

Maier, Karl: *See*—
Fritz, Hans-Gerhard; Schule, Helmut; Grunschloss, Eberhard; Riedel, Tomas; and Maier, Karl, 4,609,382, Cl. 51-298.000.

Mailhe, Catherine C.: *See*—
Hitchcock, David C.; Mailhe, Catherine C.; and De Jonghe, Lutgard C., 4,609,596, Cl. 429-104.000.

Mallet, Bernard, to VALEO. Method of assembling a clutch release bearing and corresponding clutch release bearing, in particular for automotive vehicles. 4,608,741, Cl. 29-450.000.

Malloy, Wilson J. Universal gravity actuated container-lid. 4,609,124, Cl. 220-260.000.

Manes, Kenneth; Premji, Zahirudeen; and White, Edward, to Storage Technology Partners II. Information recording disk cartridge protective structure. 4,609,105, Cl. 206-444.000.

Mannesmann Aktiengesellschaft: *See*—
Gomoll, Gunter; and Hendrischk, Wolfgang, 4,609,294, Cl. 400-59.000.
Hosang, Armin; and Versch, Josef, 4,609,212, Cl. 285-334.000.

Manns, Paul A.; and Juengel, Richard O., to GTE Valeron Corporation. Probe. 4,608,763, Cl. 33-561.000.

Manse, Aloysius H.: *See*—
Berner, Godwin; and Manse, Aloysius H., 4,609,612, Cl. 430-281.000.

Mao, Wei-Wen; Altomare, Robert E.; Giacone, Joseph; and Matias, Casimiro P., to General Foods Corporation. Manufacture of bread crumb-like product. 4,609,557, Cl. 426-549.000.

Mao, Wei-Wen: *See*—
Giacone, Joseph; Matias, Casimiro P.; Altomare, Robert E.; and Mao, Wei-Wen, 4,609,558, Cl. 426-549.000.

Maradudin, Georgy I.: *See*—
Shostak, Valentin M.; Tolochko, Alexei I.; Volkov, Vasily P.; Maradudin, Georgy I.; Schekin, Nikolai G.; Popov, Mikhail I.; Shepelev, Dmitry N.; Matveev, Anatoly I.; Butnyakov, Alexandr I.; and Rzhavichev, Anatoly P., 4,610,016, Cl. 373-137.000.

Maranzana, Giorgio: *See*—
Marraccini, Antonio; Carlini, Filippo M.; Pasquale, Antonio; and Maranzana, Giorgio, 4,609,404, Cl. 106-288.00Q.

Marchev, Zdravko B.: *See*—
Hristozov, Vladislav N.; Ribarov, Hristo M.; Marchev, Zdravko B.; Markov, Spas N.; and Valev, Atanas A., 4,609,108, Cl. 209-581.000.

Marciszewski, John E.: *See*—
Gilden, Deborah B.; and Marciszewski, John E., 4,609,356, Cl. 434-259.000.

Marck, Thierry; and Dunoutier, Gerard M. Adjustable orthopedic shoe for treating foot malformations in infants. 4,608,970, Cl. 128-80.00J.

Marconi Instruments Limited: *See*—
Wells, John N., 4,609,881, Cl. 331-1.00A.

Marec, Jean: *See*—
Bloyet, Emile; Leprince, Philippe; and Marec, Jean, 4,609,808, Cl. 219-121.0PR.

Maremont Corporation: *See*—
Gonwa, Charles J., 4,609,067, Cl. 181-211.000.

Marinos, Charalampus: *See*—
Zavesky, Ralph J.; Sovey, James S.; Mirtich, Michael J.; Marinos, Charalampus; and Penko, Paul F., 4,608,821, Cl. 60-203.100.

Mark, Victor, to General Electric Company. Process for the preparation of aromatic carbonates. 4,609,501, Cl. 260-463.000.

Markle, Robert E.: *See*—
Cogar, George R.; and Markle, Robert E., 4,609,613, Cl. 430-320.000.

Markov, Spas N.: *See*—
Hristozov, Vladislav N.; Ribarov, Hristo M.; Marchev, Zdravko B.; Markov, Spas N.; and Valev, Atanas A., 4,609,108, Cl. 209-581.000.

Marraccini, Antonio; Carlini, Filippo M.; Pasquale, Antonio; and Maranzana, Giorgio, to Montedison S.p.A. Organic dyes containing silane groups and process for preparing same. 4,609,404, Cl. 106-288.00Q.

Martin, Andrew McG.; Meyers, Kenneth C.; and Pawling, Daniel F., to Martin, Andrew McG. Easy open and reclosable bag having a separable reclosure tie. 4,609,107, Cl. 206-610.000.

Martin, Gary L.: *See*—
Morgan, Steven J.; and Martin, Gary L., 4,609,098, Cl. 198-781.000.

Martin, John C.: *See*—
Verheyden, Julien P. H.; and Martin, John C., 4,609,661, Cl. 514-262.000.

Martin Marietta Corporation: *See*—
Bergquist, Lyle E., 4,608,866, Cl. 73-40.700.

Martin-Paul, Inc.: *See*—
Belokin, Martin P., 4,609,173, Cl. 248-225.100.

Martinen, Hinrich; Simonsson, Samuel S.; and Wirth, Peter, to Rofin-Sinar Laser GmbH. Gas flow laser. 4,610,014, Cl. 372-59.000.

Masaki, Kazuo; Suzuki, Motoji; and Nakashima, Noriyuki, to Nippondenso Co., Ltd. Three-rotary position control device. 4,609,841, Cl. 310-75.00R.

Masao, Tamura; Kozuka, Hirotsugu; Wada, Yasuo; Ohkura, Makoto; Hiroshi, Tamura; Tokuyama, Takashi; Okabe, Takahiro; Minato, Osamu; and Ohba, Shinya, to Hitachi, Ltd. Method of making three dimensional semiconductor devices in selectively laser regrown polysilicon or amorphous silicon layers. 4,609,407, Cl. 148-1.500.

Masataka, Mori; Tatsuji, Chuman; Kunio, Kato; and Mikio, Ono, to Japan Tobacco & Salt Public Corporation, The; and Fuji Flavor Company, Limited. Process for converting inactive-type stereoisomers in synthesized serricornin into active-type steroisomer. 4,609,764, Cl. 568-384.000.

Masel, Ruben; and Valdshtein, George, to Koor Metals Ltd. System for handling pressurized fluids. 4,609,333, Cl. 417-393.000.

Massachusetts Institute of Technology: *See*—
Growdon, John H.; and Wurtman, Richard J., 4,609,647, Cl. 514-78.000.

Masters, James R.: *See*—
Sibley, John R.; Masters, James R.; and Squires, Oliver C., 4,609,386, Cl. 55-223.000.

Masugi, Takashi: *See*—
Takaya, Takao; Masugi, Takashi; and Kawabata, Kohji, 4,609,730, Cl. 514-202.000.

Masuhara, Toshiaki: *See*—
Sakai, Yoshio; Masuhara, Toshiaki; Minato, Osamu; and Sasaki, Toshio, 4,609,835, Cl. 307-450.000.

Mateika, Dieter W.; and Laurien, Rolf, to U.S. Philips Corporation. Cold crucible system and method for the meeting and crystallization of non-metallic inorganic compounds. 4,609,425, Cl. 156-617.0SP.

Mathews, H. Wayne: *See*—
Ray, Jimmy C.; and Mathews, H. Wayne, 4,609,789, Cl. 179-175.20D.

Matias, Casimiro P.: *See*—
Giacone, Joseph; Matias, Casimiro P.; Altomare, Robert E.; and Mao, Wei-Wen, 4,609,558, Cl. 426-549.000.
Mao, Wei-Wen; Altomare, Robert E.; Giacone, Joseph; and Matias, Casimiro P., 4,609,557, Cl. 426-549.000.
Matsui, Kazuhiro, to Kitagawa Industries Co., Ltd. Electric wire bundle clamp. 4,609,171, Cl. 248-74.300.
Matsui, Michikage: *See*—
Iohara, Kohichi; and Matsui, Michikage, 4,609,710, Cl. 525-176.000.
Matsumoto, Ikuo: *See*—
Nakamura, Takeshi; and Matsumoto, Ikuo, 4,609,844, Cl. 310-321.000.
Matsumoto, Noboru: *See*—
Kume, Toyohiko; Kurahashi, Yoshio; Isono, Kunihiro; Sakawa, Shinji; and Matsumoto, Noboru, 4,609,669, Cl. 514-399.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Kaiwa, Ryoichi; and Suganuma, Yuichiro, 4,609,790, Cl. 179-189.00R.
Ozawa, Lyuji; Schmidt, Hans; Hsu, Mike; and Perlmutter, Arye, 4,608,994, Cl. 128-670.000.
Yokoyama, Yoshihiro; Urata, Yoshito; Watanabe, Kazuo; and Ito, Kiyoteru, 4,609,277, Cl. 355-3.00R.
Yoshino, Tadashi; and Ohta, Yutaka, 4,609,952, Cl. 360-70.000.
Matsushita Electric Works, Ltd.: *See*—
Terada, Motoharu; and Murakami, Kazumasa, 4,610,012, Cl. 370-110.400.
Matsushita Electronics Corporation: *See*—
Ashizaki, Shigeya; Kimura, Masamichi; and Taniguchi, Masato, 4,609,847, Cl. 313-413.000.
Matsushita, Fumio: *See*—
Takaki, Hisashi; and Matsushita, Fumio, 4,609,886, Cl. 332-19.000.
Matsushita, Souichi: *See*—
Katoh, Kenji; Yamada, Toshio; Shindo, Kenichiro; Matsushita, Souichi; and Inoue, Tokuta, 4,608,956, Cl. 123-417.000.
Matsuura, Yuji: *See*—
Hata, Go; Etoh, Takeaki; Shirakawa, Toshifumi; Matsuura, Yuji; and Uchiyama, Takashi, 4,609,492, Cl. 252-522.00R.
Matsuyama, Shigeru, to Canon Kabushiki Kaisha. Input processor. 4,609,997, Cl. 364-900.000.
Mattern, Richard E., to Schulmerich Carillons, Inc. Cast bell motor drive system and method. 4,609,853, Cl. 318-363.000.
Matthews, John A.: *See*—
Pane, Francis C., Jr.; Matthews, John A.; Wright, Richard R.; Sarnik, John M.; and Frasca, Thomas, 4,609,150, Cl. 239-397.500.
Matushita, Hiroaki: *See*—
Okamura, Itsuji; Matushita, Hiroaki; and Murata, Kiyoshi, 4,609,458, Cl. 210-85.000.
Matveev, Anatoly I.: *See*—
Shostak, Valentin M.; Tolochko, Alexei I.; Volkov, Vasily P.; Maradudin, Georgy I.; Schekin, Nikolai G.; Popov, Mikhail I.; Shepelev, Dmitry N.; Matveev, Anatoly I.; Butnyakov, Alexandr I.; and Rzhavichev, Anatoly P., 4,610,016, Cl. 373-137.000.
Mauries, Reinhard: *See*—
Rohner, Joachim; Mauries, Reinhard; and Zumfeld, Heinz, 4,608,815, Cl. 57-22.000.
Max-Planck-Gesellschaft Zur Foederung der Wissenschaften E.V.: *See*—
Timpl, Rupert, 4,609,629, Cl. 436-512.000.
Mayer, Eberhard; Mohilo, Oskar; and Koltermann, Jurgen, to Dr. Staiger, Mohilo & Co., GmbH; and Belzer Dowidat GmbH. Hand-operated ratchet spanner for tightening screws. 4,608,872, Cl. 73-862.230.
Mayer, Jean-Philippe: *See*—
Wittwer, Fritz; and Mayer, Jean-Philippe, 4,609,403, Cl. 106-122.000.
Mazda Motor Corporation: *See*—
Maeda, Tatsuo; and Konishi, Takeshi, 4,608,779, Cl. 49-374.000.
Morita, Shigeru; Tanaka, Hideki; and Umemura, Kyoichi, 4,608,952, Cl. 123-198.00F.
Taketani, Toshinobu; Ota, Minoru; Kobayashi, Masafumi; and Kato, Kazuo, 4,609,093, Cl. 198-378.000.
Maze, Robert E. Spragless torque converter apparatus and method. 4,608,823, Cl. 60-361.000.
McCann, Denis J., to Lucas Industries public limited company. Dual brake valves. 4,609,230, Cl. 303-52.000.
McCausland, Calvin W.; and Palombo, Louis A. Portable water purification system. 4,609,466, Cl. 210-244.000.
McClure, David E.: *See*—
Baldwin, John J.; Claremon, David A.; and McClure, David E., 4,609,494, Cl. 260-243.300.
McClure, Richard R., to Butler Manufacturing Company. Slope build-up system for roofs. 4,608,791, Cl. 52-90.000.
McDonnell Douglas Corporation: *See*—
Cahill, Richard F., 4,609,290, Cl. 356-345.000.
McElroy, David J., to Texas Instruments Incorporated. Method of making dynamic memory array. 4,608,751, Cl. 29-576.00B.
McIlvaine, George V.; Baker, Thompson A.; and Uebelacker, Walter U. Method and apparatus for moving and handling heavy objects. 4,609,090, Cl. 193-47.000.
McKean, Cynthia F.: *See*—
Porter, William H.; and McKean, Cynthia F., 4,608,788, Cl. 52-64.000.
McKee, Clyde M.; Scott, Ward; Warren, Henry A.; and Scott, Dennis G. Rearview mirror actuating device. 4,609,265, Cl. 350-605.000.
McKee, Harris B.: *See*—
Ryan, Philip J.; and McKee, Harris B., 4,608,808, Cl. 53-436.000.
McKeever, Margaret L. Shoulder belt positioner. 4,609,205, Cl. 280-808.000.
McKinnon, Robert M. Pneumatic test plug. 4,608,858, Cl. 73-49.800.
McMaster, Harold A., to Glasstech, Inc. Method for forming glass sheets. 4,609,391, Cl. 65-104.000.
McMasters, O. Dale, to Iowa State University Research Foundation, Inc. Method of forming magnetostrictive rods from rare earth-iron alloys. 4,609,402, Cl. 75-65.0ZM.
McNeely, Michael D.: *See*—
Anderson, William L., Jr.; McNeely, Michael D.; Weise, Irvin B., deceased; and Weise, Stanley A., executor, 4,609,008, Cl. 137-488.000.
Mead Corporation, The: *See*—
Cason, Gary D.; Dobson, John E.; Gunter, Francis P.; Mitrovich, Svetislav; and Paranjpe, Suresh C., 4,609,517, Cl. 264-291.000.
Ullman, John E., 4,609,101, Cl. 206-45.330.
Meador, Richard A.: *See*—
Cox, Percy T.; Meador, Richard A.; Riedesel, Roland G., Jr.; and Savage, Kerry D., 4,609,873, Cl. 324-338.000.
Medical Innovation Company A/S: *See*—
Drue, Herbert R. C., 4,608,989, Cl. 128-660.000.
Meeus, Ferdinand F.: *See*—
Huybrechts, Jozef T.; and Meeus, Ferdinand F., 4,609,692, Cl. 523-439.000.
Mehl, Byron R., to Sundstrand Corporation. Incremental base drive circuit for a power transistor. 4,609,832, Cl. 307-270.000.
Mehta, Satish. Animated heart novelty display. 4,608,771, Cl. 40-427.000.
Mele, Joseph J. Part forming apparatus by flow forging. 4,608,848, Cl. 72-184.000.
Memminger GmbH: *See*—
Buck, Alfred; and Kuhn, Falk, 4,608,841, Cl. 66-104.000.
Merck & Co., Inc.: *See*—
Baldwin, John J.; Claremon, David A.; and McClure, David E., 4,609,494, Cl. 260-243.300.
Brady, Stephen F.; Napier, Mary A.; Nutt, Ruth F.; and Vandlen, Richard L., 4,609,725, Cl. 530-324.000.
Evans, Ben E.; and Rittle, Kenneth E., 4,609,641, Cl. 514-16.000.
Hartman, George D., 4,609,659, Cl. 514-255.000.
Thorsett, Eugene D.; Williamson, Joanne M.; and Wilson, Kenneth E., 4,609,742, Cl. 549-271.000.
Merck Frosst Canada Inc.: *See*—
Young, Robert N.; Rokach, Joshua; Williams, Haydn R.; Kakushima, Masatoshi; and Guindon, Yvan, 4,609,744, Cl. 549-402.000.
MERO-Raumstruktur GmbH & Co.: *See*—
Eberlein, Helmut; and Kornberger, Otto, 4,608,790, Cl. 52-81.000.
Mertens, Peter; and Meuser, Wilfried, to Fried. Krupp GmbH. Method for checking pipes or pipe networks for leaks. 4,608,857, Cl. 73-40.50R.
Mery, Jean-Claude, to Societe Anonyme D.B.A. Sliding caliper disc brake. 4,609,079, Cl. 188-73.450.
Messenger, Ronald E., to GenCorp Inc. Tire and rim safety restraint device. 4,609,025, Cl. 157-1.000.
Messier, Donald R.; DeGuire, Eileen J.; and Katz, R. Nathan, to United States of America, Army. Oxynitride glass fibers. 4,609,631, Cl. 501-35.000.
Metal Box plc: *See*—
Haslam, James K.; and Waters, Sidney W., 4,608,806, Cl. 53-314.000.
Metcalf, Wilbur F., to Electro Corporation. Magnetic sensor and circuit for detecting the edge of a target as it passes the centerline of the sensor. 4,609,869, Cl. 324-208.000.
Metz, Joseph R., to Norco, Inc. Panel fastener. 4,609,314, Cl. 411-7.000.
Meuser, Wilfried: *See*—
Mertens, Peter; and Meuser, Wilfried, 4,608,857, Cl. 73-40.50R.
Meyer, Gene A.: *See*—
White, Albert H.; Peck, Robert E.; Meyer, Gene A.; and Devanney, Raymond H., 4,608,820, Cl. 60-39.281.
Meyer, Rolf-Volker; Reinking, Klaus; Idel, Karsten-Josef; and Dhein, Rolf, to Bayer Aktiengesellschaft. Polyarylene sulphides with reduced corrosion. 4,609,699, Cl. 524-100.000.
Meyers, Kenneth C.: *See*—
Martin, Andrew McG.; Meyers, Kenneth C.; and Pawling, Daniel F., 4,609,107, Cl. 206-610.000.
Microdry Corporation: *See*—
Smith, Franklin J., 4,609,417, Cl. 156-69.000.
Microlytics, Inc.: *See*—
Rockley, Mark G., 4,608,859, Cl. 73-153.000.
Micromanipulator Microscope Company, Inc., The: *See*—
Podvin, T. Charles; and Van Benschoten, Peter J., 4,609,264, Cl. 350-529.000.
Mid-West Instrument - Div. Astra Associates, Inc.: *See*—
Mumzhiu, Alexander M., 4,609,817, Cl. 250-231.0SE.
Middleton, Anthony R.: *See*—
Griggs, Colin G.; and Middleton, Anthony R., 4,609,763, Cl. 568-342.000.
Midland-Ross Corporation: *See*—
Wilson, Clive J., 4,609,158, Cl. 241-300.000.
Midwest Laser Systems, Inc.: *See*—
Morrissy, James P.; Hunter, William J.; and Heidtman, Herman E., 4,609,807, Cl. 219-121.0LG.
Migdal, Thomas. Rotary wheel type rock picker. 4,609,049, Cl. 171-63.000.

Miki, Hiroyuki: *See*—
Shikiya, Hajime; Miki, Hiroyuki; Nakata, Yasuo; Hirata, Kazuo; and Ishiizumi, Seiichi, 4,609,065, Cl. 180-261.000.
Miki, Masaharu; and Urano, Chiaki, to Seiko Seiki Kabushiki Kaisha. Turbo-molecular pump. 4,609,332, Cl. 417-352.000.
Mikio, Ono: *See*—
Masataka, Mori; Tatsuji, Chuman; Kunio, Kato; and Mikio, Ono, 4,609,764, Cl. 568-384.000.
Mikota, Thomas I., to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Supercharged four-stroke engine with singly valved cylinders and pass-around of compressed air. 4,608,828, Cl. 60-606.000.
Milby, Gregory H.; Daniel, Richard A.; and Rostek, Paul M., to NCR Corporation. Apparatus for assisting in the connection and disconnection of a board with an energized circuit. 4,609,829, Cl. 307-150.000.
Miles Laboratories, Inc.: *See*—
Carmen, Raleigh A.; Chong, Chiyong; and Leng, Barry, 4,609,372, Cl. 604-262.000.
Chung, Koo-Heung; Davis, Gary L.; and Verhoff, Francis H., 4,609,470, Cl. 210-725.000.
Miller, Allen L. Pesticide spraying apparatus. 4,609,145, Cl. 239-77.000.
Miller, Edward H.: *See*—
Eats, James V.; Lipstein, Norman J.; and Miller, Edward H., 4,609,840, Cl. 310-58.000.
Miller, G. Kirby; Trimble, Melvin E.; and Magee, Mark R., to GTE Government Systems Corporation. Multimode perimeter intrusion detection system. 4,609,909, Cl. 340-541.000.
Miller, Gerald D.: *See*—
Hausman, Mary L.; Lenney, William E.; and Miller, Gerald D., 4,609,704, Cl. 524-710.000.
Miller, Jack E., to Big-Inch Marine Systems, Inc. Connector of and sealing of tubular members. 4,608,739, Cl. 29-421.00R.
Miller, John D., to Pall Corporation. Filter cartridge with a connector seal. 4,609,465, Cl. 210-323.200.
Miller, Richard D.; and Wyckoff, John W., to Fitch-Wyckoff International, Inc. Protective garment having variable ventilation entry and exit panels. 4,608,715, Cl. 2-1.000.
Miller, Richard F.: *See*—
Blaschke, Marilyn W.; Miller, Richard F.; and Link, John, 4,609,747, Cl. 556-77.000.
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Weimer, Robert F.; and Miller, Robert N., 4,609,455, Cl. 208-412.000.
Miller, Ronald E.; and Stark, Antony A., to AT&T Bell Laboratories. Sis mixer having thin film wrap around edge contact. 4,610,032, Cl. 455-325.000.
Miller, Walter, to Dr. Johannes Heidenhain GmbH. Sealing arrangement for encapsulated length or angle measuring system. 4,609,819, Cl. 250-237.00G.
Miller, William, to Linn Products Ltd. Loudspeaker with motional feedback. 4,609,784, Cl. 179-115.5DV.
Miller, William J.; and Lu, Chun C., to Racal Data Communications Inc. Digital voice transmission having improved echo suppression. 4,609,788, Cl. 179-170.600.
Millis, Edwin G.: *See*—
Bimer, Thomas C.; Creps, Malvern L.; and Millis, Edwin G., 4,609,103, Cl. 206-328.000.
Millot, Jean-Paul; Alibran, Patrice; Desfontaines, Guy; and Hittner, Dominique, to Framatome & Cie. Complementary shutdown device for an undermoderated nuclear reactor. 4,609,521, Cl. 376-173.000.
Mills, Henry E., to Physioventures, Inc. Apparatus for transmitting ECG data. 4,608,987, Cl. 128-639.000.
Milner, Peter H., to Beecham Group p.l.c. Methods of using β-lactam antibacterial agents. 4,609,652, Cl. 514-194.000.
Minato, Osamu: *See*—
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Minnesota Mining and Manufacturing Company: *See*—
Barnett, Scott L.; and Fariss, Gary M., 4,609,380, Cl. 51-298.000.
Cutler, Larry P.; Guehler, Paul F.; and Insley, Thomas I., 4,609,584, Cl. 428-156.000.
Nourse, Gary E.; and Dowdle, Dean M., 4,609,911, Cl. 340-572.000.
Ott, Ronald L., 4,609,581, Cl. 428-100.000.
Reed, Katherine E., 4,609,578, Cl. 428-76.000.
Rogers, Bruce J., 4,609,779, Cl. 179-2.00R.
Wrobel, Norbert E., 4,609,208, Cl. 283-81.000.
Minolta Camera Kabushiki Kaisha: *See*—
Murata, Tomoji; and Ito, Masazumi, 4,609,283, Cl. 355-14.00R.
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Mirtich, Michael J.: *See*—
Zavesky, Ralph J.; Sovey, James S.; Mirtich, Michael J.; Marinos, Charalampus; and Penko, Paul F., 4,608,821, Cl. 60-203.100.
Mischel, Peter: *See*—
Dermitzakis, Stephan; Suri, Jasbeer S.; Krumrein, Gerhard; and Mischel, Peter, 4,609,880, Cl. 330-308.000.
Mitani, Katsuji: *See*—
Yoshino, Yataro; Oshida, Mamoru; and Mitani, Katsuji, 4,609,418, Cl. 156-87.000.
Mitchell, Joan L.: *See*—
Anderson, Karen L.; Goertzel, Gerald; and Mitchell, Joan L., 4,610,027, Cl. 382-56.000.
Mitrovich, Svetislav: *See*—
Cason, Gary D.; Dobson, John E.; Gunter, Francis P.; Mitrovich, Svetislav; and Paranjpe, Suresh C., 4,609,517, Cl. 264-291.000.
Mitsubishi Chemical Industries, Ltd.: *See*—
Kohashi, Yasuji; Ishiwatari, Toshio; and Fujita, Hisanori, 4,609,411, Cl. 148-171.000.
Yoshimura, Tamotsu; and Nakamura, Masahiko, 4,609,720, Cl. 528-190.000.
Mitsubishi Denki K.K.: *See*—
Higashino, Shigenori; Shikano, Yoshiro; and Katsuki, Kanji, 4,609,831, Cl. 307-270.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Mizuno, Masahiro; and Baba, Hiroshi, 4,609,953, Cl. 360-78.000.
Nakajima, Toshihiro; Hisamoto, Yoshiaki; and Yamagami, Kozo, 4,609,933, Cl. 357-38.000.
Ohishi, Hirotoshi; Fujii, Hiroshi; and Fujihisa, Hiroaki, 4,609,799, Cl. 200-153.00G.
Shimomura, Setsuhiro, 4,609,452, Cl. 204-425.000.
Shimomura, Setsuhiro, 4,609,453, Cl. 204-425.000.
Takenobu, Shinya, 4,609,848, Cl. 313-417.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Araki, Yozo, 4,608,803, Cl. 53-202.000.
Mitsubishi Monsanto Chemical Co., Ltd.: *See*—
Kohashi, Yasuji; Ishiwatari, Toshio; and Fujita, Hisanori, 4,609,411, Cl. 148-171.000.
Mitsubishi Rayon Co., Ltd.: *See*—
Izumi, Jinko; Imai, Yoshitaka; Nakatani, Munetsugu; Tanuku, Yoshiteru; and Fukahori, Naoyuki, 4,609,540, Cl. 423-447.600.
Mitsushima, Susumu: *See*—
Yasaki, Susumu; Ishiai, Yoshinori; Mitsushima, Susumu; and Nakamura, Takashi, 4,609,048, Cl. 169-61.000.
Mitzutani, Morikazu, to Canon Kabushiki Kaisha. Image formation apparatus. 4,609,276, Cl. 355-3.00R.
Miyai, Kiyoshi; Uotani, Shuhei; and Tsunemine, Toyohiko, to Sanyo Electric Co., Ltd. Portable electrostatographic copying machine. 4,609,281, Cl. 355-3.00R.
Miyakawa, Kazuo; Osaki, Tatsuo; Sawada, Toshiaki; and Ishikawa, Kiichiro, to Yoshida Kogyo K. K. Method of attaching fly strips to a slide fastener chain. 4,608,745, Cl. 29-408.000.
Miyakoshi, Shinichi; Yamamoto, Toshifumi; and Negishi, Yoshio, to Honda Giken Kogyo Kabushiki Kaisha. Telescopic front suspension. 4,609,202, Cl. 280-276.000.
Miyamoto, Yoshihiro, to Fujitsu Limited. Optical shield for image sensing device. 4,609,820, Cl. 250-338.000.
Miyasaka, Masao: *See*—
Hishinuma, Hiroshi; Miyasaka, Masao; Okada, Kenji; and Morio, Shuichi, 4,609,815, Cl. 250-222.100.
Miyauchi, Tateoki: *See*—
Hongo, Mikio; Mizukoshi, Katsurou; Miyauchi, Tateoki; Kawanabe, Takao; and Koizumi, Yasuhiro, 4,609,566, Cl. 427-53.100.
Yamaguchi, Hiroshi; Shimase, Akira; Miyauchi, Tateoki; and Hongo, Mikio, 4,609,809, Cl. 219-121.0EM.
Miyawaki, Yoshiharu: *See*—
Kamio, Morinori; Tsuji, Masahiro; Kawauchi, Susumu; Ono, Jun; Isayama, Hideki; Nishimoto, Akihiko; Miyawaki, Yoshiharu; Nozoe, Osamu; and Iwase, Koji, 4,609,412, Cl. 148-12.00C.
Miyazaki, Akira; and Yamaguchi, Jun-ichi, to Fuji Xerox Co., Ltd. Sentence displaying apparatus with sentence section. 4,609,919, Cl. 340-792.000.
Mizuhara, Masaru: *See*—
Kobayashi, Takashi; and Mizuhara, Masaru, 4,609,089, Cl. 192-138.000.
Mizukoshi, Katsurou: *See*—
Hongo, Mikio; Mizukoshi, Katsurou; Miyauchi, Tateoki; Kawanabe, Takao; and Koizumi, Yasuhiro, 4,609,566, Cl. 427-53.100.
Mizumura, Motoo; and Wada, Kenzo, to NEC Corporation. Microwave oscillator hermetically sealed and coupled to dielectric resonator. 4,609,883, Cl. 331-96.000.
Mizuno, Hiroichi: *See*—
Sumino, Yoshitsugu; and Mizuno, Hiroichi, 4,609,361, Cl. 440-73.000.
Mizuno, Masahiro; and Baba, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Disk unit. 4,609,953, Cl. 360-78.000.
Mobil Oil Corporation: *See*—
Collins, Gregory P., 4,609,445, Cl. 204-165.000.
Cullick, Alvin S., 4,609,043, Cl. 166-268.000.
Heilweil, Israel J., 4,609,476, Cl. 252-8.55R.
Schmitt, Kirk D., 4,609,708, Cl. 525-61.000.
Mobil Solar Energy Corporation: *See*—
Yates, Douglas A., 4,609,565, Cl. 427-38.000.
Mockli, Peter, to Ciba-Geigy Corporation. Novel dyes, their production and their use. 4,609,738, Cl. 548-217.000.
Mogami, Takao: *See*—
Deguchi, Hirokazu; Kojima, Kenji; and Mogami, Takao, 4,609,267, Cl. 351-163.000.
Mohilo, Oskar: *See*—
Mayer, Eberhard; Mohilo, Oskar; and Koltermann, Jurgen, 4,608,872, Cl. 73-862.230.
Mold-Masters Limited: *See*—
Harrison, Arthur, 4,609,138, Cl. 228-161.000.

Moller, Ole H.; and Po Loi Chu, Paul, to Advanced Micro Devices, Inc. Expandable four-port register file. 4,610,004, Cl. 365-230.000.
Mongiello, Angelo, Sr. Cheese manufacturing method and apparatus. 4,608,921, Cl. 99-455.000.
Monnier, Charles E.: *See—*
Darms, Roland; Kvita, Vratislav; and Monnier, Charles E., 4,609,741, Cl. 549-241.000.
Monolithic Memories, Inc.: *See—*
Bosnyak, Robert J.; Chau, Hua T.; Goddard, Donald; and Wong, Sing, 4,609,998, Cl. 365-96.000.
Monsanto Company: *See—*
Crutchfield, Marvin M.; and Hinkebein, John A., 4,609,433, Cl. 162-145.000.
Lee, Len F., 4,609,399, Cl. 71-94.000.
Montedison S.p.A.: *See—*
Marraccini, Antonio; Carlini, Filippo M.; Pasquale, Antonio; and Maranzana, Giorgio, 4,609,404, Cl. 106-288.00Q.
Moore, Byron E.: *See—*
Ball, Gregory A.; Moore, Byron E.; Haynes, John D.; and Moser, James N., 4,608,936, Cl. 112-121.120.
Moore, David N.; and Zemlo, Bridgett, to Phoenix Closures, Inc. Tamper-evident closure and bottle assembly. 4,609,115, Cl. 215-252.000.
Moore, George F., Jr.; and Krenzer, Eberhard, to Barmag Barmer Maschinenfabrik AG. Method and apparatus for producing an air texturized yarn. 4,608,814, Cl. 57-7.000.
Moore, Marvin F., to Thermalloy Incorporated. Self-securing heat sink. 4,609,040, Cl. 165-80.300.
Moore, Robert E.: *See—*
Bell, Jerry L.; Douma, John D.; Keinath, David P.; and Moore, Robert E., 4,608,895, Cl. 83-345.000.
Morales, Ramon A., to Komline-Sanderson Engineering Corporation. Rotary plow assembly. 4,609,467, Cl. 210-396.000.
Moran, John H., to Interpace Corporation. Bushing including an expansion compensation seal. 4,609,775, Cl. 174-152.00R.
Morgan, Roger J.: *See—*
Seymour, Raymond K.; Morgan, Roger J.; and Gillette, Stephen F., 4,609,898, Cl. 335-202.000.
Morgan, Steven J.; and Martin, Gary L., to Figgie International Inc. Zero pressure accumulating conveyor and module. 4,609,098, Cl. 198-781.000.
Mori, Kei. Light radiator. 4,609,974, Cl. 362-32.000.
Mori, Masaharu, to Clarion Co., Ltd. Receiver including surface acoustic wave amplifier. 4,610,031, Cl. 455-263.000.
Morimoto, Takuo; Nishiuchi, Kihachiro; and Wada, Kenichi, to Otsuka Chemical Co., Ltd. Process for preparing metamorphosed alkaline titanates. 4,609,694, Cl. 423-598.000.
Morin, Louis G., to American Cyanamid Company. Apparatus for the production of continuous yarns or tows comprising high strength metal coated fibers. 4,609,449, Cl. 204-206.000.
Morio, Shuichi: *See—*
Hishinuma, Hiroshi; Miyasaka, Masao; Okada, Kenji; and Morio, Shuichi, 4,609,815, Cl. 250-222.100.
Morioka, Mikio; and Shimizu, Atsushi, to Sumitomo Electric Industries, Ltd. GaAs single crystal with small fluctuation in impurity concentration in the plane perpendicular to the growth direction of the crystal. 4,609,530, Cl. 420-555.000.
Morishita, Masataka; Aikawa, Renji; and Yamamoto, Yoshiaki, to Toyo Jozo Company, Ltd. Preparation having excellent absorption property. 4,609,640, Cl. 514-12.000.
Morita, Shigeru; Tanaka, Hideki; and Umemura, Kyoichi, to Mazda Motor Corporation. Balancer control device for multiple-cylinder four-cycle engine. 4,608,952, Cl. 123-198.00F.
Moritomo, Takao: *See—*
Torii, Michihiro; Moritomo, Takao; Endo, Kaoru; and Ito, Norifumi, 4,609,956, Cl. 360-100.000.
Morris, Gilbert V., to Teledyne Electro-Mechanisms. Apparatus for soldering printed circuit panels. 4,608,941, Cl. 118-63.000.
Morris, Lester; Singh, Hakam; and Zook, Jonathan D., to Products Research & Chemical Corp. Thioethers having a high sulfur content and method therefor. 4,609,762, Cl. 568-38.000.
Morris, William M.; Witzel, Frank; Puglia, Wayne J.; Mackay, Donald A. M.; Clark, K. Warren; and Patanasinth, Kanit J., to Nabisco Brands, Inc. Soft homogeneous antacid tablet. 4,609,543, Cl. 424-38.000.
Morrison, David G.: *See—*
Carr, Michael D.; Morrison, David G.; and Nicol, Richard C., 4,609,941, Cl. 358-136.000.
Morrison-Knudsen Company, Inc.: *See—*
Loire, Rene , 4,609,306, Cl. 405-196.000.
Morrison, Peter C. Surgical needle assembly and apparatus for attachment on a surgical needle assembly. 4,609,370, Cl. 604-165.000.
Morrissy, James P.; Hunter, William J.; and Heidtman, Herman E., to Midwest Laser Systems, Inc. Apparatus and methods for laser severing metal tubular stock. 4,609,807, Cl. 219-121.0LG.
Morse, Amos W.: *See—*
Boan, Bobby J.; Schwam, Martin; Sullivan, Marvin R.; and Morse, Amos W., 4,609,923, Cl. 343-897.000.
Mortensen, John: *See—*
Heinze, Jurgen; and Mortensen, John, 4,609,600, Cl. 429-197.000.
Mortimer, J. Thomas: *See—*
Crish, Timothy J.; Sweeney, James D.; and Mortimer, J. Thomas, 4,608,985, Cl. 128-419.00R.
Morton, John S.; and Parkinson, James F., to Whipp & Bourne Limited. Splitter plate. 4,609,797, Cl. 200-144.00R.
Moser, James N.: *See—*
Ball, Gregory A.; Moore, Byron E.; Haynes, John D.; and Moser, James N., 4,608,936, Cl. 112-121.120.
Mosko, Joseph A.: *See—*
Corzine, Robert G.; and Mosko, Joseph A., 4,609,888, Cl. 333-34.000.
Motorola, Inc.: *See—*
Andrews, Nicholas W., 4,609,855, Cl. 318-561.000.
Boland, Bernard W., 4,609,413, Cl. 148-175.000.
Brown, Leland T., 4,609,782, Cl. 179-18.0HB.
Gay, Michael J., 4,609,781, Cl. 179-16.0AA.
Higgins, Robert J., Jr., 4,609,892, Cl. 333-204.000.
Kindinger, Peter A.; and Eriksson, Einar A., 4,609,884, Cl. 331-109.000.
Scharr, Thomas A.; and Winchell, Vern H., II, 4,609,936, Cl. 357-68.000.
Moulin, Blaise: *See—*
Bauer, Eric; and Moulin, Blaise, 4,609,296, Cl. 400-175.000.
Mozdzen, Edward C.: *See—*
Banasiak, Dennis S.; Mozdzen, Edward C.; and Byers, Jim D., 4,609,498, Cl. 260-410.90R.
Muacevic, Gojko: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, 4,609,672, Cl. 514-522.000.
Muck, Hajo; and Becker, Wolfgang, to GAO Gesellschaft fur Automation und Organisation mbH. Method of testing a security and a security for carrying out this method. 4,609,207, Cl. 283-70.000.
Mueller, Martin: *See—*
Francis, Ronald R.; and Mueller, Martin, 4,608,809, Cl. 53-471.000.
Mugrauer, Hubert: *See—*
Hausmann, Gerhard; Mugrauer, Hubert; and Naeser, Helmut, 4,609,279, Cl. 355-3.0SH.
Muir, Earl B.; Griffith, Russell W.; and Lilienthal, Gerald W., to Copeland Corporation. Scroll-type machine with rotation controlling means and specific wrap shape. 4,609,334, Cl. 418-55.000.
Mukasa, Koichi: *See—*
Nakashima, Keishi; Hatanai, Takashi; Mukasa, Koichi; and Shimada, Yutaka, 4,609,593, Cl. 428-611.000.
Mulherin, Byron J., Jr.: *See—*
Macevicz, Clement C.; and Mulherin, Byron J., Jr., 4,609,463, Cl. 210-238.000.
Muller, Alexander, to General Electric Company. Apparatus, method of operating apparatus and method of assembling a rotatable assembly. 4,608,752, Cl. 29-598.000.
Muller, Arno, to Pitney Bowes Inc. Postal meter value selector sequencing system. 4,608,923, Cl. 101-91.000.
Muller, Gunter: *See—*
Kobel, Alfons; Damm, Norbert; Geiger, Werner; and Muller, Gunter, 4,609,033, Cl. 164-169.000.
Muller, Hans G.; and Wess, Othmar, to Dornier System GmbH. Generation for shock waves for contactless destruction of concrements in a living being. 4,608,983, Cl. 128-328.000.
Muller, Rainer: *See—*
Goebel, Konrad; Muller, Rainer; and Schiffers, Ulrich, 4,608,818, Cl. 60-39.120.
Muller, Richard S.; and Polla, Dennis L., to University of California, The Regents of the. Integrated pyroelectric sensor and method. 4,608,865, Cl. 73-204.000.
Muller, Walter, to Ewikon Entwicklung und Konstruktion GmbH & Co KG. Hot-runner tool for supplying molten plastic to an injection mold. 4,609,341, Cl. 425-547.000.
Mumzhiu, Alexander M., to Mid-West Instrument - Div. Astra Associates, Inc. Optical shaft position sensor. 4,609,817, Cl. 250-231.0SE.
Munchow und Huhne Maschinenbaugesellschaft mbH: *See—*
Huhne, Siegmar, 4,608,893, Cl. 83-171.000.
Mund, Konrad: *See—*
Edeling, Martin; Mund, Konrad; Rao, Raghavendra; and Weidlich, Erhard, 4,609,508, Cl. 264-29.600.
Mundloch, James D.: *See—*
Ruhmann, Douglas C.; Britton, Ralph A.; Mundloch, James D.; and Vorwerk, Frederick E., 4,608,931, Cl. 105-248.000.
Munier, Bernard; and Arques, Marc, to Thomson-CSF. Photosensitive device for the infrared range. 4,609,824, Cl. 250-578.000.
Munier, Bernard, to Thomson-CSF. Device photosensitive to infra-red radiation. 4,609,943, Cl. 358-213.000.
Munro, David: *See—*
Clark, Michael T.; Munro, David; and Gilmore, Ian J., 4,609,394, Cl. 71-90.000.
Murakami, Azuma; Taguchi, Yoshinori; and Yamanami, Tsuguya, to Wacom Co., Ltd. Coordinate input device with display. 4,609,776, Cl. 178-18.000.
Murakami, Kazumasa: *See—*
Terada, Motoharu; and Murakami, Kazumasa, 4,610,012, Cl. 370-110.400.
Murakami, Masashige: *See—*
Fujita, Akiharu; Sato, Minako; and Murakami, Masashige, 4,609,680, Cl. 521-48.000.
Murata, Kiyoshi: *See—*
Okamura, Itsuji; Matushita, Hiroaki; and Murata, Kiyoshi, 4,609,458, Cl. 210-85.000.
Murata Manufacturing Co., Ltd.: *See—*
Nakamura, Takeshi; and Matsumoto, Ikuo, 4,609,844, Cl. 310-321.000.
Senda, Atsuo; Kasanami, Tohru; and Nakagawa, Takuji, 4,609,409, Cl. 148-13.000.

Murata, Tomoji; and Ito, Masazumi, to Minolta Camera Kabushiki Kaisha. Copying apparatus with preprogrammed features enabled by a document. 4,609,283, Cl. 355-14.00R.

Murdock, Wilbert, to COM Sports, Inc. Knee alignment monitoring apparatus. 4,608,998, Cl. 128-782.000.

Murti, Dasarao K.: *See*—
Ong, Beng S.; Murti, Dasarao K.; and Keoshkerian, Barkev, 4,609,602, Cl. 430-58.000.

Myers, John R.: *See*—
Steilen, Ronald M.; Myers, John R.; and Rettig, Vernon E., 4,609,203, Cl. 280-461.00A.

Nabeta, Osamu: *See*—
Nishiura, Masaharu; and Nabeta, Osamu, 4,609,770, Cl. 136-244.000.

Nabisco Brands, Inc.: *See*—
Morris, William M.; Witzel, Frank; Puglia, Wayne J.; Mackay, Donald A. M.; Clark, K. Warren; and Patanasinth, Kanit J., 4,609,543, Cl. 424-38.000.

Naeser, Helmut: *See*—
Hausmann, Gerhard; Mugrauer, Hubert; and Naeser, Helmut, 4,609,279, Cl. 355-3.0SH.

Nagahara, Michiko: *See*—
Ohishi, Yoshitaka; Nagahara, Michiko; Takehisa, Yoshitaka; Yajima, Motoyuki; Kurokawa, Shigeki; Kajikawa, Norio; and Itoh, Akira, 4,609,736, Cl. 548-183.000.

Nagao, Makoto: *See*—
Arai, Yoshihiro; Nahara, Akira; Nagao, Makoto; and Fukino, Kiyotaka, 4,609,962, Cl. 360-131.000.

Nagasawa, Kazumasa: *See*—
Kawai, Sumio; Nagasawa, Kazumasa; and Kishihata, Kazuo, 4,608,766, Cl. 34-57.00A.

Nahara, Akira: *See*—
Arai, Yoshihiro; Nahara, Akira; Nagao, Makoto; and Fukino, Kiyotaka, 4,609,962, Cl. 360-131.000.

Nahill, Thomas E.: *See*—
Krishnakumar, Suppayan M.; and Nahill, Thomas E., 4,609,516, Cl. 264-255.000.

Nakada, Yasuo; and Kato, Yukihiro, to Sony Corporation. Automatic focus control system for video camera. 4,609,944, Cl. 358-228.000.

Nakadate, Takanori: *See*—
Yamazaki, Toshiaki; Nakadate, Takanori; Kitahara, Kenichi; Kobayashi, Morio; Fujimori, Noboru; and Shimosaki, Ryuji, 4,609,617, Cl. 430-535.000.

Nakagami, Kenji: *See*—
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Nakagami Kogyo Kabushiki Kaisha: *See*—
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Nakagawa, Satoshi: *See*—
Katoh, Katsunori; and Nakagawa, Satoshi, 4,609,619, Cl. 430-553.000.

Nakagawa, Takuji: *See*—
Senda, Atsuo; Kasanami, Tohru; and Nakagawa, Takuji, 4,609,409, Cl. 148-13.000.

Nakagawa, Toyoaki: *See*—
Asano, Masaharu; Kawamura, Yoshihisa; and Nakagawa, Toyoaki, 4,609,292, Cl. 374-144.000.

Nakajima, Toshihiro; Hisamoto, Yoshiaki; and Yamagami, Kozo, to Mitsubishi Denki Kabushiki Kaisha. Gate turn-off thyristor having P^+ gate and emitter. 4,609,933, Cl. 357-38.000.

Nakamori, Yoshio: *See*—
Nishida, Shinji; Otsuka, Takashi; Nakamori, Yoshio; and Sato, Mitsukuni, 4,609,338, Cl. 425-149.000.

Nakamura, Hagime: *See*—
Ishida, Mikio; Ishimori, Shoso; Nakamura, Hagime; and Ushiro, Kenzo, 4,608,879, Cl. 74-474.000.

Nakamura, Haruo, to Seiko Epson Corporation. Liquid crystal optical device. 4,609,256, Cl. 350-346.000.

Nakamura, Masahiko: *See*—
Yoshimura, Tamotsu; and Nakamura, Masahiko, 4,609,720, Cl. 528-190.000.

Nakamura, Takashi: *See*—
Yasaki, Susumu; Ishiai, Yoshinori; Mitsushima, Susumu; and Nakamura, Takashi, 4,609,048, Cl. 169-61.000.

Nakamura, Takeshi; and Matsumoto, Ikuo, to Murata Manufacturing Co., Ltd. Piezoelectric vibrator. 4,609,844, Cl. 310-321.000.

Nakanishi, Yasuhiro; and Hatta, Koichi, to Sharp Kabushiki Kaisha. Graph-drawing machine. 4,609,918, Cl. 340-753.000.

Nakano, Yasuhiko; and Akutsu, Shigemitsu, to Honda Giken Kogyo Kabushiki Kaisha. Two-cycle engine. 4,608,949, Cl. 123-73.00A.

Nakaoka, Masaki; Komatsu, Teruo; and Goto, Shinji, to Canon Kabushiki Kaisha. Rotary drive device. 4,609,251, Cl. 350-6.800.

Nakashima, Keishi; Hatanai, Takashi; Mukasa, Koichi; and Shimada, Yutaka, to Alps Electric Co., Ltd. Magnetic recording medium. 4,609,593, Cl. 428-611.000.

Nakashima, Noriyuki: *See*—
Masaki, Kazuo; Suzuki, Motoji; and Nakashima, Noriyuki, 4,609,841, Cl. 310-75.00R.

Nakata, Yasuo: *See*—
Shikiya, Hajime; Miki, Hiroyuki; Nakata, Yasuo; Hirata, Kazuo; and Ishiizumi, Seiichi, 4,609,065, Cl. 180-261.000.

Nakatani, Koma. Foldable easel. 4,609,174, Cl. 248-465.000.

Nakatani, Munetsugu: *See*—
Izumi, Jinko; Imai, Yoshitaka; Nakatani, Munetsugu; Tanuku, Yoshiteru; and Fukahori, Naoyuki, 4,609,540, Cl. 423-447.600.

Nakatani, Yasuhiko: *See*—
Oshino, Masao; and Nakatani, Yasuhiko, 4,609,313, Cl. 410-67.000.

Nakatsuhara, Youichi, to Aisin Seiki Kabushiki Kaisha. Integral-type disk brake. 4,609,077, Cl. 188-73.380.

Nakaya, Takao: *See*—
Omoto, Hideo; and Nakaya, Takao, 4,609,786, Cl. 179-156.00R.

Naniwa, Isao; Nishida, Kazuo; and Yoshihara, Kiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Door hinge device for a repository. 4,609,234, Cl. 312-296.000.

Napier, Mary A.: *See*—
Brady, Stephen F.; Napier, Mary A.; Nutt, Ruth F.; and Vandlen, Richard L., 4,609,725, Cl. 530-324.000.

Narayanan, Kesh S.; and Vagarali, Suresh S., to Norton Company. Grinding aid. 4,609,381, Cl. 51-298.000.

Naruse, Kazuo: *See*—
Tobita, Hideaki; and Naruse, Kazuo, 4,609,805, Cl. 219-93.000.

National Forge Co.: *See*—
Khare, Ashok K., 4,608,851, Cl. 72-364.000.

National Research Development Corporation: *See*—
Elliott, Timothy J.; and Challen, Michael P., 4,608,775, Cl. 47-1.00R.
Scott, Peter B., 4,609,220, Cl. 294-87.100.

Natori, Kenji, to Kabushiki Kaisha Toshiba. Dynamic type semiconductor memory device. 4,610,003, Cl. 365-228.000.

Nattrass, Frank, to Nattrass-Hickey and Sons Limited. Bulk containers. 4,610,028, Cl. 383-7.000.

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Nattrass, Frank, 4,610,028, Cl. 383-7.000.

Navarette, Carlos A., to Allied Corporation. Linear hydraulic actuator having ballistic tolerant. 4,608,912, Cl. 92-5.00R.

NCR Corporation: *See*—
Claessen, Albertus M. G.; and van Bokhorst, Hendrik, 4,610,010, Cl. 370-32.000.
Milby, Gregory H.; Daniel, Richard A.; and Rostek, Paul M., 4,609,829, Cl. 307-150.000.

NEC Corporation: *See*—
Kaneko, Shouji, 4,610,002, Cl. 365-206.000.
Kondo, Hideyuki, 4,609,935, Cl. 357-51.000.
Mizumura, Motoo; and Wada, Kenzo, 4,609,883, Cl. 331-96.000.

Necchi Societa per Azioni: *See*—
Bisson, Flavio, 4,608,938, Cl. 112-121.290.

Neef, Gunter: *See*—
Rohde, Ralph; Annen, Klaus; Neef, Gunter; Wiechert, Rudolf; Beier, Sybille; Elger, Walter; and Henderson, David, 4,609,651, Cl. 514-179.000.

Negishi, Yoshio: *See*—
Miyakoshi, Shinichi; Yamamoto, Toshifumi; and Negishi, Yoshio, 4,609,202, Cl. 280-276.000.

Nekola, Randy A. Extension for outrigger beam. 4,609,204, Cl. 280-766.100.

Nemec, Josef, to St. Jude Children's Research Hospital. Epipodophyllotoxinquinone glucoside derivatives, method of production and use. 4,609,644, Cl. 514-27.000.

Nemoto, Akira, to Tachikawa Spring Co., Ltd. Frame molding process of a seat for vehicles. 4,608,744, Cl. 29-527.100.

Nepple, Richard E. Synchro-vane vertical axis wind powered generator. 4,609,827, Cl. 290-44.000.

Neri, Carlo; and Buonomo, Franco, to Anic, S.p.A. Process for oxidizing vinylbenzene compounds to β-phenylaldehydes. 4,609,765, Cl. 568-430.000.

Neste Oy: *See*—
Karna, Toivo, 4,608,944, Cl. 122-4.00D.

Nestler, Heinz: *See*—
Barfurth, Dieter; and Nestler, Heinz, 4,609,745, Cl. 556-40.000.
Barfurth, Dieter; and Nestler, Heinz, 4,609,746, Cl. 556-40.000.

Neugen, Dink; Bull, Stephen M.; and Ferramola, Gabriel D., to Zwick Energy Research Organization, Inc. Method and apparatus for generation of a pneumatic feedback trigger signal. 4,609,003, Cl. 137-2.000.

Neuman, Eli, to Perfectdata Corporation. Floppy diskette storage container. 4,609,231, Cl. 312-15.000.

Neuschaeffer, Karl H.; Spielau, Paul; Engels, Hans-Werner; and Zoche, Guenter, to Dynamit Nobel Aktiengesellschaft. Facings of inorganic molding compositions for building components. 4,608,795, Cl. 52-309.120.

New York Blood Center, Inc.: *See*—
Goldstein, Jack, 4,609,627, Cl. 435-269.000.

Newbold, Donald L.: *See*—
Chapman, John A.; Johnson, Thomas M.; and Newbold, Donald L., 4,609,147, Cl. 239-183.000.

Newsome, James G.: *See*—
Magyar, Arpad M.; Newsome, James G.; and Patton, Darrell W., 4,609,406, Cl. 134-2.000.

Ng, W. S. Dominic, to Camco Inc. Glass countertop range mounting. 4,608,962, Cl. 126-211.000.

NGK Insulators, Ltd.: *See*—
Okamoto, Magoji, 4,609,430, Cl. 159-29.000.

Nguyen, Tran G.: *See*—
Eggerer, Hermann; Hagenbruch, Bernd; Nguyen, Tran G.; Stegmeier, Karlheinz; and Pill, Johannes, 4,609,673, Cl. 514-542.000.

Nguyen Xuan, Kiet: *See*—
Bedos, Thierry; Clerissi, Roland; Vallee, Jacques; and Nguyen Xuan, Kiet, 4,609,916, Cl. 340-703.000.

Nicholas, William J.: *See*—
Prows, Reed N.; and Nicholas, William J., 4,608,919, Cl. 99-450.600.

Nicholson, Michael D.; and Roy, Gerald A., Jr., to Du Pont de Nemours, E. I., and Company. Herbicidal fluoroethoxy triazines. 4,609,398, Cl. 71-93.000.

Nicholson, Myron D., to Viskase Corporation. Tar-depleted liquid smoke and method of preparation. 4,609,559, Cl. 426-650.000.

Nickols, Richard C., to United States of America, Energy. Molten carbonate fuel cell separator. 4,609,595, Cl. 429-35.000.

Nicol, Richard C.: *See*—
Carr, Michael D.; Morrison, David G.; and Nicol, Richard C., 4,609,941, Cl. 358-136.000.

Nicolet, Andre : *See*—
Gentet, Michel; and Nicolet, Andre , 4,609,957, Cl. 360-101.000.

Nicollini, Germano; Senderowicz, Daniel; and Confalonieri, Pierangelo, to SGS Microelettronica S.p.A. Buffer circuit with differential structure for measurement of capacitive charges. 4,609,877, Cl. 330-9.000.

Nicoloso, Dante, to Alsthom. Means for assembling two enclosures of an electrical cutout apparatus. 4,609,798, Cl. 200-148.00R.

Nielsen, Anker J., Jr.; and Davis, George W., to Nielsen, Anker J., Jr. Tamper indicating cover for a gas meter. 4,609,217, Cl. 292-307.00B.

Nielsen, David A.: *See*—
Rockett, Luann T.; Nielsen, David A.; Shipp, Peter W., Jr.; and Knopp, Greggory I., 4,609,580, Cl. 428-198.000.

Nieratschker, Willi: *See*—
Peschka, Walter; Schneider, Gottfried; and Nieratschker, Willi, 4,608,830, Cl. 62-7.000.

Nifco Inc.: *See*—
Hara, Kunio, 4,609,136, Cl. 227-136.000.

Nigro, Paul: *See*—
Kasper, Kevin; and Nigro, Paul, 4,609,104, Cl. 206-334.000.

Nihon Radiator Co., Ltd.: *See*—
Shimada, Yukio; Kato, Shizuo; and Tajima, Katsuichiro, 4,608,914, Cl. 98-2.060.

Nihon Tokushu Noyaku Seizo K.K.: *See*—
Kume, Toyohiko; Kurahashi, Yoshio; Isono, Kunihiro; Sakawa, Shinji; and Matsumoto, Noboru, 4,609,669, Cl. 514-399.000.

Nilsson, Goran; Edstrom, Kjell; and Wiklund, Henry. Anti-noise impact element. 4,609,054, Cl. 173-118.000.

Nimbus Water Systems, Inc.: *See*—
Macevicz, Clement C.; and Mulherin, Byron J., Jr., 4,609,463, Cl. 210-238.000.

Ninkaplast GmbH: *See*—
Twellmann, Guenter, 4,609,236, Cl. 312-330.00R.

Nippon Gakki Co., Ltd.: *See*—
Takabayashi, Youjiro, 4,608,905, Cl. 84-313.000.
Takabayashi, Youjiro, 4,608,906, Cl. 84-313.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Omoto, Hideo; and Nakaya, Takao, 4,609,786, Cl. 179-156.00R.

Nippon Kokan Kabushiki Kaisha: *See*—
Kamio, Morinori; Tsuji, Masahiro; Kawauchi, Susunu; Ono, Jun; Isayama, Hideki; Nishimoto, Akihiko; Miyawaki, Yoshiharu; Nozoe, Osamu; and Iwase, Koji, 4,609,412, Cl. 148-12.00C.

Nippon Mining Co., Ltd: *See*—
Kamio, Morinori; Tsuji, Masahiro; Kawauchi, Susumu; Ono, Jun; Isayama, Hideki; Nishimoto, Akihiko; Miyawaki, Yoshiharu; Nozoe, Osamu; and Iwase, Koji, 4,609,412, Cl. 148-12.00C.

Nippon Notion Kogyo Co., Ltd.: *See*—
Kasai, Kazumi, 4,608,735, Cl. 24-196.000.

Nippon Seimitsu Kogyo Kabushiki Kaisha: *See*—
Kaise, Hitoshi, 4,609,273, Cl. 354-271.100.

Nippon Soken, Inc.: *See*—
Sakakibara, Yasuyuki; and Tokura, Norihito, 4,608,958, Cl. 123-605.000.

Nippon Steel Corporation: *See*—
Odashima, Hisao; Saito, Takao; and Hirano, Yoshihiko, 4,609,594, Cl. 428-629.000.

Nippon Zeon Co., Ltd.: *See*—
Yamada, Hideaki; Shimizu, Sakayu; and Shiozaki, Shozo, 4,609,626, Cl. 435-195.000.

Nippondenso Co., Ltd.: *See*—
Masaki, Kazuo; Suzuki, Motoji; and Nakashima, Noriyuki, 4,609,841, Cl. 310-75.00R.

Niriki, Takashi: *See*—
Suemitsu, Takashi; Suzuki, Shinichi; and Niriki, Takashi, 4,609,259, Cl. 350-417.000.

Nishida, Kazuo: *See*—
Naniwa, Isao; Nishida, Kazuo; and Yoshihara, Kiyoshi, 4,609,234, Cl. 312-296.000.

Nishida, Shinji; Otsuka, Takashi; Nakamori, Yoshio; and Sato, Mitsukuni, to Shinagawa Shirorenga Kabushiki Kaisha. Apparatus for pressure molding firebrick. 4,609,338, Cl. 425-149.000.

Nishida, Yoko: *See*—
Yoshimura, Yoshinobu; Nishida, Yoko; and Yashiki, Takatsuka, 4,609,650, Cl. 514-178.000.

Nishimatsu, Shigeru: *See*—
Ogawa, Yoshifumi; Nishiumi, Masaharu; Tanaka, Yoshie; Okudaira, Sadayuki; and Nishimatsu, Shigeru, 4,609,426, Cl. 156-626.000.

Nishimori, Sinji, to Ebara Corporation. Submergible pump. 4,609,327, Cl. 415-121.00B.

Nishimoto, Akihiko: *See*—
Kamio, Morinori; Tsuji, Masahiro; Kawauchi, Susumu; Ono, Jun; Isayama, Hideki; Nishimoto, Akihiko; Miyawaki, Yoshiharu; Nozoe, Osamu; and Iwase, Koji, 4,609,412, Cl. 148-12.00C.

Nishimura, Iwao: *See*—
Ishikawa, Hiroshi; Oguro, Keisuke; Suzuki, Hiroshi; Kato, Akihiko; Okada, Teruya; Sakamoto, Shizuo; Nishimura, Iwao; and Sakaguchi, Keizo, 4,609,038, Cl. 165-104.120.

Nishimura, Tetsuharu: *See*—
Yokota, Hideo; Kato, Masatake; and Nishimura, Tetsuharu, 4,609,272, Cl. 354-225.000.

Nishitani, Kiyoshi: *See*—
Yamagiwa, Kazuo; Nishitani, Kiyoshi; Takeuchi, Koichi; and Sato, Seiji, 4,609,947, Cl. 358-310.000.

Nishiuchi, Kihachiro: *See*—
Morimoto, Takuo; Nishiuchi, Kihachiro; and Wada, Kenichi, 4,609,694, Cl. 423-598.000.

Nishiumi, Masaharu: *See*—
Ogawa, Yoshifumi; Nishiumi, Masaharu; Tanaka, Yoshie; Okudaira, Sadayuki; and Nishimatsu, Shigeru, 4,609,426, Cl. 156-626.000.

Nishiura, Masaharu; and Nabeta, Osamu, to Fuji Electric Corporate Research & Development Ltd. Thin-film solar cell array. 4,609,770, Cl. 136-244.000.

Nishiwaki, Mitsuhiro: *See*—
Hisamoto, Iwao; Maeda, Chiaki; and Nishiwaki, Mitsuhiro, 4,609,489, Cl. 252-355.000.

Nissan Motor Company, Limited: *See*—
Asano, Masaharu; Kawamura, Yoshihisa; and Nakagawa, Toyoaki, 4,609,292, Cl. 374-144.000.
Noso, Kazunori; Kishi, Norimasa; and Futami, Toru, 4,610,023, Cl. 381-43.000.
Suzuki, Kunihiko; and Enomoto, Koji, 4,609,064, Cl. 180-233.000.

NL Industries, Inc.: *See*—
Summers, Charles F., 4,609,821, Cl. 250-255.000.

Noble, Wendell P., Jr.: *See*—
Ishaq, Mousa H.; and Noble, Wendell P., Jr., 4,609,429, Cl. 156-656.000.

Nobuaki, Kitajima; Shinichi, Nishimura; and Susumu, Takahashi, to Tokyo Kogaku Kikai Kabushiki Kaisha. Control for operation microscopes. 4,609,814, Cl. 250-201.000.

Nogimori, Katsumi; Tamura, Makoto; Kurokawa, Shigeki; and Yajima, Motoyuki, to Kaken Pharmaceutical Co., Ltd. Biologically active substance from Islets-Activating Protein. 4,609,549, Cl. 424-92.000.

Noguchi, Hideo; and Iwamoto, Tugunari, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing a memory FET with shorted source and drain region. 4,608,748, Cl. 29-571.000.

Nogueira, Eduardo D. Procedure for the cathodic electrowinning of metals, with the corresponding acid generation, from its salt solution. 4,609,443, Cl. 204-104.000.

Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic set-up system. 4,609,000, Cl. 134-62.000.

Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic set-up system. 4,609,001, Cl. 134-62.000.

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Noizet, Erwin, to REICH Spezialmaschinen GmbH. Band saw for foodstuffs. 4,608,892, Cl. 83-168.000.

Noonan, John M.; Perlstein, Jerome H.; and Scozzafava, Michael, to Eastman Kodak Company. Polyesters comprising recurring photoconductive and photocrosslinkable units and elements thereof. 4,609,606, Cl. 430-69.000.

Norco, Inc.: *See*—
Metz, Joseph R., 4,609,314, Cl. 411-7.000.

Nordt, Herbert, deceased: *See*—
Dorlars, Alfons; Blank, Heinz U.; Nordt, Herbert, deceased; and Trescher, Viktor, 4,609,756, Cl. 562-495.000.

Nordt, Hildegard, heiress: *See*—
Dorlars, Alfons; Blank, Heinz U.; Nordt, Herbert, deceased; and Trescher, Viktor, 4,609,756, Cl. 562-495.000.

North American Philips Corporation: *See*—
Jayaraman, Raj; and Singer, Barry M., 4,609,929, Cl. 357-23.400.
Shaffer, Jesse S., 4,609,971, Cl. 361-433.000.
Ustin, George; and Soltis, Andrew P., 4,609,246, Cl. 339-59.00M.

Northern Telecom Limited: *See*—
Brown, Allan P.; and Charlebois, Leonard J., 4,609,773, Cl. 174-92.000.
Sims, Dewey M., Jr., 4,609,955, Cl. 360-93.000.
Taralp, Guner, 4,609,887, Cl. 333-28.00R.

Norton Company: *See*—
Narayanan, Kesh S.; and Vagarali, Suresh S., 4,609,381, Cl. 51-298.000.

Noso, Kazunori; Kishi, Norimasa; and Futami, Toru, to Nissan Motor Company, Limited. Speech recognition system and method for variable noise environment. 4,610,023, Cl. 381-43.000.

Nourse, Gary E.; and Dowdle, Dean M., to Minnesota Mining and Manufacturing Company. Variable frequency RF electronic surveillance system. 4,609,911, Cl. 340-572.000.

Novagene, Ltd.: *See*—
Kit, Malon; and Kit, Saul, 4,609,548, Cl. 424-89.000.

Nowinski, Robert C.; and Hoffman, Allan S., to Genetic Systems Corporation. Synthesis of polymers containing integral antibodies. 4,609,707, Cl. 525-54.100.

Nozoe, Osamu: *See*—
Kamio, Morinori; Tsuji, Masahiro; Kawauchi, Susumu; Ono, Jun; Isayama, Hideki; Nishimoto, Akihiko; Miyawaki, Yoshiharu; Nozoe, Osamu; and Iwase, Koji, 4,609,412, Cl. 148-12.00C.

Nozu, Taketo; Kimura, Yoshiaki; and Tanaka, Yasuhiko, to Konishiroku Photo Industry Co., Ltd. Method for removing air bubbles or solid impurities from the printing head of a drop-on-demand type ink jet printer. 4,609,925, Cl. 346-1.100.

Nuclear Technology Corporation: *See—*
D'Muhala, Thomas F.; and Ward, Robert C., 4,609,757, Cl. 564-151.000.
Nutt, Ruth F.: *See—*
Brady, Stephen F.; Napier, Mary A.; Nutt, Ruth F.; and Vandlen, Richard L., 4,609,725, Cl. 530-324.000.
Oates, Daniel E.; and Wright, Peter V. Bulk acoustic wave signal processing devices. 4,609,890, Cl. 333-187.000.
O'Brien, Michael J.; and Wallace, Gordon F., to Perkin-Elmer Corporation, The. Apparatus for controlling a plasma. 4,609,810, Cl. 219-121.0PT.
O'Brien, Walter W. Book binder and display easel. 4,609,206, Cl. 281-33.000.
Odashima, Hisao; Saito, Takao; and Hirano, Yoshihiko, to Nippon Steel Corporation. Process for producing cold rolled steel strip highly susceptible to conversion treatment and product thereof. 4,609,594, Cl. 428-629.000.
O'Donnell, Matthew, to General Electric Company. NMR multiple-echo phase-contrast blood flow imaging. 4,609,872, Cl. 324-306.000.
Oellerer, Friedrich: *See—*
Theurer, Josef; and Oellerer, Friedrich, 4,608,928, Cl. 104-3.000.
Oettl, Reinhold, to Stumpp & Kurz GmbH & Co. Device for fastening an object against a wall or the like. 4,609,316, Cl. 411-45.000.
Offerman, Karl B.: *See—*
Irvin, Ronald D.; Offerman, Karl B.; and Jacobs, Lynn C., 4,609,958, Cl. 360-106.000.
Officine Meccaniche Veronesi SpA (O.M.V.): *See—*
Padovani, Pietro, 4,609,339, Cl. 425-383.000.
Ogawa, Hirofumi: *See—*
Kusano, Chushirou; Ishioka, Sachio; Shimomoto, Yasuharu; Imamura, Yoshinori; and Ogawa, Hirofumi, 4,609,846, Cl. 313-384.000.
Ogawa, Tetsuya: *See—*
Kitano, Kisei; Ogawa, Tetsuya; Goto, Yasuyuki; and Yoshida, Naoyuki, 4,609,485, Cl. 252-299.610.
Ogawa, Yoichi: *See—*
Inaniwa, Masahiro; Suzuki, Shun; and Ogawa, Yoichi, 4,609,861, Cl. 320-32.000.
Ogawa, Yoshifumi; Nishiumi, Masaharu; Tanaka, Yoshie; Okudaira, Sadayuki; and Nishimatsu, Shigeru, to Hitachi, Ltd. Method and apparatus for monitoring etching. 4,609,426, Cl. 156-626.000.
Ogihara, Yoshihisa: *See—*
Esashi, Yasuyoshi; Yoneyama, Fumiaki; and Ogihara, Yoshihisa, 4,609,499, Cl. 260-414.000.
Oguchi, Toshiaki, to Citizen Watch Co., Ltd. Tuning device. 4,609,894, Cl. 334-11.000.
Oguino, Masanori, to Hitachi, Ltd. Video projection apparatus with temperature compensation device. 4,609,945, Cl. 358-237.000.
Oguro, Keisuke: *See—*
Ishikawa, Hiroshi; Oguro, Keisuke; Suzuki, Hiroshi; Kato, Akihiko; Okada, Teruya; Sakamoto, Shizuo; Nishimura, Iwao; and Sakaguchi, Keizo, 4,609,038, Cl. 165-104.120.
Ohba, Shinya: *See—*
Masao, Tamura; Kozuka, Hirotsugu; Wada, Yasuo; Ohkura, Makoto; Hiroshi, Tamura; Tokuyama, Takashi; Okabe, Takahiro; Minato, Osamu; and Ohba, Shinya, 4,609,407, Cl. 148-1.500.
Ohishi, Hirotoshi; Fujii, Hiroshi; and Fujihisa, Hiroaki, to Mitsubishi Denki Kabushiki Kaisha. Circuit interrupter. 4,609,799, Cl. 200-153.00G.
Ohishi, Yoshitaka; Nagahara, Michiko; Takehisa, Yoshitaka; Yajima, Motoyuki; Kurokawa, Shigeki; Kajikawa, Norio; and Itoh, Akira, to Kaken Pharmaceutical Co., Ltd. Rhodanines useful as a therapeutic agent for diabetic complications. 4,609,736, Cl. 548-183.000.
Ohkura, Makoto: *See—*
Masao, Tamura; Kozuka, Hirotsugu; Wada, Yasuo; Ohkura, Makoto; Hiroshi, Tamura; Tokuyama, Takashi; Okabe, Takahiro; Minato, Osamu; and Ohba, Shinya, 4,609,407, Cl. 148-1.500.
Ohnishi, Toyokazu: *See—*
Toyokura, Nobuo; Ohnishi, Toyokazu; and Yokoyama, Naoki, 4,609,903, Cl. 338-22.0SD.
Ohno, Shigeru: *See—*
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,609,604, Cl. 430-57.000.
Ohnuki, Yukihiko: *See—*
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,609,604, Cl. 430-57.000.
Ohta, Yutaka: *See—*
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Ohtaki, Kiyoshi; and Hara, Kazuo, to Fuji Jukogyo Kabushiki Kaisha. Ignition timing control system for an automotive engine. 4,608,955, Cl. 123-408.000.
Ohtsubo, Hiro: *See—*
Hosoda, Yukio; Ohtsubo, Hiro; and Yamada, Hiroyuki, 4,609,589, Cl. 428-352.000.
Oil-Rite Corporation: *See—*
Berrend, Richard E., 4,609,074, Cl. 184-81.000.
Oishi, Kiyohiko: *See—*
Inoue, Tokuta; Oishi, Kiyohiko; Okamoto, Takamitsu; and Takeda, Keiso, 4,608,948, Cl. 123-52.00M.
Oji Paper Company, Ltd.: *See—*
Hosoda, Yukio; Ohtsubo, Hiro; and Yamada, Hiroyuki, 4,609,589, Cl. 428-352.000.
Ojima, Iwao: *See—*
Koishi, Toshio; Ishihara, Akira; Fuchigami, Takamasa; and Ojima, Iwao, 4,609,715, Cl. 526-245.000.
Okabe, Takahiro: *See—*
Masao, Tamura; Kozuka, Hirotsugu; Wada, Yasuo; Ohkura, Makoto; Hiroshi, Tamura; Tokuyama, Takashi; Okabe, Takahiro; Minato, Osamu; and Ohba, Shinya, 4,609,407, Cl. 148-1.500.
Okada, Kenji: *See—*
Hishinuma, Hiroshi; Miyasaka, Masao; Okada, Kenji; and Morio, Shuichi, 4,609,815, Cl. 250-222.100.
Okada, Teruya: *See—*
Ishikawa, Hiroshi; Oguro, Keisuke; Suzuki, Hiroshi; Kato, Akihiko; Okada, Teruya; Sakamoto, Shizuo; Nishimura, Iwao; and Sakaguchi, Keizo, 4,609,038, Cl. 165-104.120.
Okada, Yasuyuki: *See—*
Tabata, Kuniaki; Machida, Tetsuo; Takeda, Haruo; Takada, Naoki; and Okada, Yasuyuki, 4,610,026, Cl. 382-47.000.
Okamoto, Hiroshi, to Kawasaki Jukogyo Kabushiki Kaisha. Sliding door apparatus. 4,608,777, Cl. 49-214.000.
Okamoto, Magoji, to NGK Insulators, Ltd. Liquid material drying apparatus. 4,609,430, Cl. 159-29.000.
Okamoto, Takamitsu: *See—*
Inoue, Tokuta; Oishi, Kiyohiko; Okamoto, Takamitsu; and Takeda, Keiso, 4,608,948, Cl. 123-52.00M.
Okamoto, Tetsuo: *See—*
Sugiura, Sabro; Hayashi, Kiyohide; Kanada, Kenji; Demukai, Noboru; and Okamoto, Tetsuo, 4,609,538, Cl. 423-244.000.
Okamura, Itsuji; Matushita, Hiroaki; and Murata, Kiyoshi, to Toyota Jidosha Kabushiki Kaisha; Mac Incorporated; and Okaya and Co., Ltd. Device for removing moisture from oil. 4,609,458, Cl. 210-85.000.
Okano, Takashi, to Pioneer Video Corporation. Apparatus to control time base fluctuation in a signal from a device for reproducing recorded information from a recording disc. 4,609,948, Cl. 358-338.000.
Okaya and Co., Ltd.: *See—*
Okamura, Itsuji; Matushita, Hiroaki; and Murata, Kiyoshi, 4,609,458, Cl. 210-85.000.
Okazaki, Masaki: *See—*
Sugimoto, Tadao; Yamada, Sumito; Ikeda, Tadashi; Takei, Haruo; and Okazaki, Masaki, 4,609,621, Cl. 430-567.000.
Okazaki, Morio: *See—*
Fushiki, Takeo; Takahashi, Koji; and Okazaki, Morio, 4,609,039, Cl. 165-174.000.
Oki Electric Industry Co., Ltd.: *See—*
Yamashita, Yoshio; and Kawazu, Ryuji, 4,609,615, Cl. 430-325.000.
Okubo, Kiyokazu; Guss, Walter; and Leinfellner, Herwig, to Honda Giken Kogyo Kabushiki Kaisha. Gear shift device for transmissions. 4,608,877, Cl. 74-473.00R.
Okudaira, Sadayuki: *See—*
Ogawa, Yoshifumi; Nishiumi, Masaharu; Tanaka, Yoshie; Okudaira, Sadayuki; and Nishimatsu, Shigeru, 4,609,426, Cl. 156-626.000.
Okuyama, Kiyotaka: *See—*
Hosaka, Akihiko; Okuyama, Kiyotaka; and Kanazawa, Kiyosumi, 4,609,588, Cl. 428-329.000.
Olin Corporation: *See—*
Davidson, Jeffrey; Babish, John G.; and Wedig, John H., 4,609,665, Cl. 514-335.000.
Egan, Philip A., 4,609,478, Cl. 252-8.55D.
Reynolds, Don E.; and Kilby, James D., 4,609,472, Cl. 210-750.000.
Olympus Industries, Inc.: *See—*
Wade, Bill R.; and Wade, Thelma L., 4,609,561, Cl. 426-565.000.
Olympus Optical Co., Ltd.: *See—*
Imaizumi, Masaki, 4,609,263, Cl. 350-454.000.
Omark Industries, Inc.: *See—*
Doiron, Gerald J., 4,608,901, Cl. 83-834.000.
Omata, Kazuo; Shimizu, Toshihiko; Ibe, Hiroshi; and Hara, Kenji, to Onoda Construction Materials Co., Ltd. Process for inhibiting corrosion of steel materials built in inorganic materials. 4,609,573, Cl. 427-403.000.
Omoto, Hideo; and Nakaya, Takao, to Nippon Gakki Seizo Kabushiki Kaisha. Band and the headphone utilizing the same. 4,609,786, Cl. 179-156.00R.
Omura, Satoshi. Macrolide antibiotics, pharmaceutical compositions and methods of use. 4,609,645, Cl. 514-30.000.
Ong, Beng S.; Murti, Dasarao K.; and Keoshkerian, Barkev, to Xerox Corporation. Photoresponsive imaging members with electron transporting layers. 4,609,602, Cl. 430-58.000.
Ong, Richard H.; and Economopoulos, Peter C., to Honeywell Information Systems Inc. Write amplifier. 4,610,001, Cl. 365-189.000.
Ono, Jun: *See—*
Kamio, Morinori; Tsuji, Masahiro; Kawauchi, Susumu; Ono, Jun; Isayama, Hideki; Nishimoto, Akihiko; Miyawaki, Yoshiharu; Nozoe, Osamu; and Iwase, Koji, 4,609,412, Cl. 148-12.00C.
Onoda Construction Materials Co., Ltd.: *See—*
Omata, Kazuo; Shimizu, Toshihiko; Ibe, Hiroshi; and Hara, Kenji, 4,609,573, Cl. 427-403.000.
Onodera, Kaoru: *See—*
Sasaki, Masao; and Onodera, Kaoru, 4,609,618, Cl. 430-546.000.
Oostdik, Dennis J.: *See—*
Hickey, Charles P.; and Oostdik, Dennis J., 4,608,837, Cl. 62-400.000.
Oral Ease Inc.: *See—*
Rosofsky, Paul M., 4,608,968, Cl. 128-62.00A.

Orton, George F.: *See—*
Schweickert, Thomas F.; and Orton, George F., 4,609,169, Cl. 244-169.000.

Osada Electric Co., Ltd.: *See—*
Aihara, Takao, 4,608,980, Cl. 128-303.100.

Osaki, Tatsuo: *See—*
Miyakawa, Kazuo; Osaki, Tatsuo; Sawada, Toshiaki; and Ishikawa, Kiichiro, 4,608,745, Cl. 29-408.000.

Osborne, Kenneth: *See—*
Payne, Derick B.; and Osborne, Kenneth, 4,608,950, Cl. 123-195.00C.

Oshida, Mamoru: *See—*
Yoshino, Yataro; Oshida, Mamoru; and Mitani, Katsuji, 4,609,418, Cl. 156-87.000.

Oshino, Masao; and Nakatani, Yasuhiko, to Kawasaki Jukogyo Kabushiki Kaisha; and Yashiro Kako Ltd. Box having means for guiding and locking wheeled pallet. 4,609,313, Cl. 410-67.000.

Ota, Minoru: *See—*
Taketani, Toshinobu; Ota, Minoru; Kobayashi, Masafumi; and Kato, Kazuo, 4,609,093, Cl. 198-378.000.

Otake, Shuichi: *See—*
Takeuchi, Minami; and Otake, Shuichi, 4,609,937, Cl. 357-79.000.

Otsuka Chemical Co., Ltd.: *See—*
Morimoto, Takuo; Nishiuchi, Kihachiro; and Wada, Kenichi, 4,609,694, Cl. 423-598.000.

Otsuka Kagaku Kabushiki Kaisha: *See—*
Torii, Sigeru; Tanaka, Hideo; Sasaoka, Michio; Uto, Seiryu; and Kameyama, Yutaka, 4,609,438, Cl. 204-72.000.

Otsuka, Takashi: *See—*
Nishida, Shinji; Otsuka, Takashi; Nakamori, Yoshio; and Sato, Mitsukuni, 4,609,338, Cl. 425-149.000.

Ott, Gunther: *See—*
Geist, Michael; Ott, Gunther; and Schon, Georg, 4,609,446, Cl. 204-181.700.
Geist, Michael; Ott, Gunther; and Schon, Georg, 4,609,691, Cl. 523-415.000.

Ott, Ronald L., to Minnesota Mining and Manufacturing Company. Coated abrasive sheet material with loop attachment means. 4,609,581, Cl. 428-100.000.

Otto, William L., Jr.: *See—*
Ballantyne, John A.; and Otto, William L., Jr., 4,608,850, Cl. 72-240.000.

Ou, Jung-Hsing: *See—*
Hartmann, Robert F.; Chan, Yiu-Fai; Frankovich, Robert; and Ou, Jung-Hsing, 4,609,986, Cl. 364-200.000.

Outboard Marine Corporation: *See—*
VanRens, Russell J., 4,609,028, Cl. 164-34.000.

Owens-Corning Fiberglas Corporation: *See—*
Aschenbeck, David P., 4,609,628, Cl. 436-34.000.
Pollet, Jean-Claude; Armstrong, Gordon P.; and Flautt, Martin C., 4,609,591, Cl. 428-391.000.
Yau, Ben J., 4,609,709, Cl. 525-164.000.

Owens-Illinois, Inc.: *See—*
Keyes, Melvin H.; and Vasan, Saraswathi, 4,609,625, Cl. 435-176.000.

Oy W. Rosenlew AB: *See—*
Huhtala, Esko; Laaksonen, Markku; Vaho, Matti; Karttunen, Johannes; and Eklund, Gosta, 4,610,029, Cl. 383-10.000.

Oyobiki, Yoshinori: *See—*
Fukushima, Matsuhiro; Kaifu, Hitoshi; and Oyobiki, Yoshinori, 4,608,784, Cl. 51-237.00R.

Ozawa, Lyuji; Schmidt, Hans; Hsu, Mike; and Perlmutter, Arye, to Matsushita Electric Industrial Co., Ltd. Physiological monitoring system. 4,608,994, Cl. 128-670.000.

Pa Ang, Peter G.: *See—*
Sammells, Anthony F.; and Pa Ang, Peter G., 4,609,451, Cl. 204-265.000.

Padovani, Pietro, to Officine Meccaniche Veronesi SpA (O.M.V.). Matrix mold for making stackable containers. 4,609,339, Cl. 425-383.000.

Paerels, Gerard B.; and Raven, Cornelis W., to Duphar International Research B.V. Diphenyl ethers having herbicidal activity. 4,609,753, Cl. 560-13.000.

Paffett, Nicholas B.: *See—*
Krent, Edward D.; and Paffett, Nicholas B., 4,609,194, Cl. 273-73.00D.

Paine, John C., to Caterpillar Industrial Inc. Electrically isolated actuation apparatus. 4,609,904, Cl. 340-52.00R.

Pall Corporation: *See—*
Miller, John D., 4,609,465, Cl. 210-323.200.

Palombo, Louis A.: *See—*
McCausland, Calvin W.; and Palombo, Louis A., 4,609,466, Cl. 210-244.000.

Pamment, Noel G., to Industrial Containers (Aust.) Pty. Ltd. Waste container. 4,609,117, Cl. 220-1.00T.

Pampalone, Thomas R.; Khan, Ahmad H.; and DiPiazza, James J., to RCA Corporation. Process of using absorptive layer in optical lithography with overlying photoresist layer to form relief pattern on substrate. 4,609,614, Cl. 430-323.000.

Pane, Francis C., Jr.; Matthews, John A.; Wright, Richard R.; Sarnik, John M.; and Frasca, Thomas, to United Technologies Corporation. Fuel nozzle for gas turbine engine. 4,609,150, Cl. 239-397.500.

Panoz, Donald E.; and Corneille, Gilbert, to Elan Corporation, P.L.C. New pharmaceutical forms for administration of medicaments by oral route, with programmed release. 4,609,542, Cl. 424-19.000.

Panzer, Jerome: *See—*
Craig, Raymond C.; Panzer, Jerome; Wisotsky, Max J.; and Beltzer, Morton, 4,609,376, Cl. 44-53.000.

Paolo Conti and Meritex S.r.l.: *See—*
Riccitelli, Ivan, 4,608,840, Cl. 66-30.000.

Papchenko, Andrei Y.: *See—*
Scheglov, Jury A.; Koval, Nikolai P.; Furer, Leonid A.; Zargarian, Sergei Y.; Skimbov, Anatoly A.; Belik, Vladimir G.; Zharik, Boris N.; Papchenko, Andrei Y.; Ryabinsky, Filipp G.; Sergeev, Alexandr S., deceased; and Sergeeva, Galina A., administrator, 4,608,920, Cl. 99-451.000.

Papitto, Ralph, executor: *See—*
LeMieux, David M.; Dodenhoff, John A., deceased; and Papitto, Ralph, executor, 4,609,774, Cl. 174-152.0GM.

Paques B.V.: *See—*
Vellinga, Sjoerd H. J., 4,609,460, Cl. 210-188.000.

Paranjpe, Suresh C.: *See—*
Cason, Gary D.; Dobson, John E.; Gunter, Francis P.; Mitrovich, Svetislav; and Paranjpe, Suresh C., 4,609,517, Cl. 264-291.000.

Paris, Win S.; and Knipp, Russell, to Paris, Winn S. Back and gluteus maximus exerciser. 4,609,193, Cl. 272-145.000.

Paris, Winn S.: *See—*
Paris, Win S.; and Knipp, Russell, 4,609,193, Cl. 272-145.000.

Park, Kap Y. Automobile parking and storage system. 4,608,929, Cl. 104-44.000.

Parker Hannifin Corporation: *See—*
Ferguson, John H.; and Perkins, Dana P., 4,608,742, Cl. 29-458.000.

Parkinson, James F.: *See—*
Morton, John S.; and Parkinson, James F., 4,609,797, Cl. 200-144.00R.

Parkison, Richard G.; and Phillips, George E., to American Standard Inc. Diverter. 4,609,006, Cl. 137-119.000.

Parks, Dale B.; and Kosmider, Ronald T., to Magnetic Technologies Corp. Magnet developer rolls. 4,608,737, Cl. 29-110.000.

Pasquale, Antonio: *See—*
Marraccini, Antonio; Carlini, Filippo M.; Pasquale, Antonio; and Maranzana, Giorgio, 4,609,404, Cl. 106-288.00Q.

Passarotti, Carlo: *See—*
Doria, Gianfederico; Passarotti, Carlo; and Corno, Maria L., 4,609,660, Cl. 514-258.000.

Pasteris, Robert J.; and Thompson, Mark E., to Du Pont de Nemours, E. I., and Company. Novel benzylsulfonylureas and arylsulfamoylureas N-[(substituted pyrimidin-2-yl)aminocarbonyl]-1-oxo-fused benzyl-7-methanesulfonamides useful as herbicides and plant growth regulants. 4,609,395, Cl. 71-90.000.

Pasterkamp, Klaas, to Administratie - en Automatisergscentrum Vulcaan B.V. Weighing device with load sensing of traveling balances. 4,609,059, Cl. 177-50.000.

Patanasinth, Kanit J.: *See—*
Morris, William M.; Witzel, Frank; Puglia, Wayne J.; Mackay, Donald A. M.; Clark, K. Warren; and Patanasinth, Kanit J., 4,609,543, Cl. 424-38.000.

Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH: *See—*
Eckhardt, Fritz; Helbig, Peter; and Schonherr, Walter, 4,609,977, Cl. 362-267.000.
Geissler, Udo, 4,609,976, Cl. 362-202.000.

Patton, Darrell W.: *See—*
Magyar, Arpad M.; Newsome, James G.; and Patton, Darrell W., 4,609,406, Cl. 134-2.000.

Patzke, Hans-Jurgen: *See—*
Giesing, Herbert; Koerner, Gotz; Kropac, Vaclay; Patzke, Hans-Jurgen; Quilitsch, Herbert; Rau, Harald; Schamberg, Eckehard; Spieker, Fritz; and Weitemeyer, Christian, 4,609,752, Cl. 556-457.000.

Paul, Donald M.: *See—*
Bannell, John L. K.; and Paul, Donald M., 4,610,007, Cl. 367-104.000.

Pawling, Daniel F.: *See—*
Martin, Andrew McG.; Meyers, Kenneth C.; and Pawling, Daniel F., 4,609,107, Cl. 206-610.000.

Payne, Derick B.; and Osborne, Kenneth, to Perkins Engines Group Limited. Machine cover. 4,608,950, Cl. 123-195.00C.

Peck, Robert E.: *See—*
White, Albert H.; Peck, Robert E.; Meyer, Gene A.; and Devanney, Raymond H., 4,608,820, Cl. 60-39.281.

Peerman, Dwight E.: *See—*
Rogier, Edgar R.; Kanten, H. Gordon; and Peerman, Dwight E., 4,609,723, Cl. 528-339.300.

Penko, Paul F.: *See—*
Zavesky, Ralph J.; Sovey, James S.; Mirtich, Michael J.; Marinos, Charalampus; and Penko, Paul F., 4,608,821, Cl. 60-203.100.

Pennzoil Company: *See—*
Magyar, Arpad M.; Newsome, James G.; and Patton, Darrell W., 4,609,406, Cl. 134-2.000.

Pentith, Gerald R. O., to Continental Conveyor and Equipment Company, Inc. Belt conveyor arrangement. 4,609,099, Cl. 198-833.000.

Percheron nee Guegan, Annick; Achard, Jean-Claude; Bronoel, Guy; and Sarradin, Joel, to Agence Nationale de Valorisation de la Recherche (ANVAR). New lanthanum and nickel based alloys, their manufacture and their electrochemical applications. 4,609,599, Cl. 429-218.000.

Perfectdata Corporation: *See—*
Neuman, Eli, 4,609,231, Cl. 312-15.000.

Perisic, Zoran. Dual screen system. 4,609,253, Cl. 350-174.000.

Perkin-Elmer Corporation, The: *See—*
La Fiandra, Carlo, 4,610,020, Cl. 378-35.000.

O'Brien, Michael J.; and Wallace, Gordon F., 4,609,810, Cl. 219-121.0PT.

Perkins, Dana P.: *See—*
Ferguson, John H.; and Perkins, Dana P., 4,608,742, Cl. 29-458.000.

Perkins Engines Group Limited: *See—*
Payne, Derick B.; and Osborne, Kenneth, 4,608,950, Cl. 123-195.00C.

Perlmutter, Arye: *See—*
Ozawa, Lyuji; Schmidt, Hans; Hsu, Mike; and Perlmutter, Arye, 4,608,994, Cl. 128-670.000.

Perlstein, Jerome H.: *See—*
Noonan, John M.; Perlstein, Jerome H.; and Scozzafava, Michael, 4,609,606, Cl. 430-69.000.

Permanent Images, Inc.: *See—*
Cogar, George R.; and Markle, Robert E., 4,609,613, Cl. 430-320.000.

Perper, Lloyd J., to Iota Engineering Co. Lamp ballast with near unity power factor and low harmonic content. 4,609,852, Cl. 315-278.000.

Perrella, Guido. Nozzle assembly for die casting machine. 4,609,032, Cl. 164-312.000.

Perrier de la Bathie, Rene; and Terrier, Jacques, to Commissariat a l'Energie Atomique. High frequency induction melting furnace and process for the production of ceramic materials using this furnace. 4,610,017, Cl. 373-156.000.

Perron, Robert: *See—*
Gauthier-Lafaye, Jean; and Perron, Robert, 4,609,504, Cl. 260-549.000.

Perry Manufacturing Incorporated: *See—*
Edwards, Paul M., 4,609,071, Cl. 182-152.000.

Peschka, Walter; Schneider, Gottfried; and Nieratschker, Willi, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Method and apparatus for the automatic refilling of a liquid hydrogen tank in a motor vehicle. 4,608,830, Cl. 62-7.000.

Peschmann, Kristian R.; and Bower, John H., to Imatron, Inc. X-ray transmission scanning system having variable fan beam geometry. 4,610,021, Cl. 378-150.000.

Peters, Albert: *See—*
Wild, Walter; and Peters, Albert, 4,609,227, Cl. 299-93.000.

Peters, Franz-Josef. Interchangeable barrel for small arms. 4,608,909, Cl. 89-196.000.

Peterson, Jerold J., to 4C Electronics, Inc. Programmable programmed socket. 4,609,241, Cl. 339-17.0CF.

Petit, John L.: *See—*
Van Handel, Gerald J.; Petit, John L.; and Wnek, Patrick H., 4,609,140, Cl. 229-2.50R.

Petkash, Robert P.: *See—*
Collins, Marcus H.; and Petkash, Robert P., 4,609,076, Cl. 188-71.500.

Petrolite Corporation: *See—*
Watson, Frederick D., 4,609,010, Cl. 137-587.000.

Pettyjohn, William H., to Combustion Engineering, Inc. Stud hole boring and tapping machine. 4,609,311, Cl. 408-79.000.

Phillips, George E.: *See—*
Parkison, Richard G.; and Phillips, George E., 4,609,006, Cl. 137-119.000.

Phillips Petroleum Company: *See—*
Banasiak, Dennis S.; Mozdzen, Edward C.; and Byers, Jim D., 4,609,498, Cl. 260-410.90R.
Drake, Charles A., 4,609,637, Cl. 502-174.000.
Kukes, Simon; and Banks, Robert L., 4,609,769, Cl. 585-646.000.
Kukes, Simon G.; and Hawley, Gil R., 4,609,638, Cl. 502-208.000.

Phoenix Aktiengesellschaft: *See—*
Albers, Gunter, 4,609,697, Cl. 524-68.000.

Phoenix Closures, Inc.: *See—*
Moore, David N.; and Zemlo, Bridgett, 4,609,115, Cl. 215-252.000.

Physioventures, Inc.: *See—*
Mills, Henry E., 4,608,987, Cl. 128-639.000.

Piaggio & C. S.p.A.: *See—*
Benvenuti, Livio, 4,608,953, Cl. 123-335.000.

Pichard, Marcel; and Brossy, Pierre, to Isover Saint-Gobain. Processes for making molded composite panels. 4,609,519, Cl. 264-510.000.

Pickett, Teddy L.: *See—*
Self, Henry L.; and Pickett, Teddy L., 4,609,215, Cl. 292-144.000.

Pieczykolan, George S., to Central Sprinkler Corporation. Quick release mechanism for sprinkler head. 4,609,047, Cl. 169-38.000.

Pierce, Wilbur: *See—*
Blum, Eric; and Pierce, Wilbur, 4,610,025, Cl. 382-9.000.

Pill, Johannes: *See—*
Eggerer, Hermann; Hagenbruch, Bernd; Nguyen, Tran G.; Stegmeier, Karlheinz; and Pill, Johannes, 4,609,673, Cl. 514-542.000.

Pillis, Joseph W.; and Wile, Hans C., to Frick Company. Micro-processor control of a movable slide stop and a movable slide valve in a helical screw rotary compressor with an enconomizer inlet port. 4,609,329, Cl. 417-282.000.

Pilotto, Italo; and Bozzetto, Gerardo, to Simmel S.p.A. Convex type bottom with a bearing rim for bottles for industrial gases obtained by means of hot forging from a steel billet. 4,609,118, Cl. 220-3.000.

Pinkhasov, Eduard, to Wedtech Corp. Method of and apparatus for the coating of a substrate with material electrically transformed into a vapor phase. 4,609,564, Cl. 427-37.000.

Pioneer Electronic Corporation: *See—*
Ishibashi, Masaya; Kiyomiya, Masaaki; and Kanda, Jun, 4,610,008, Cl. 369-34.000.
Komatsubara, Masahiro; Kamimura, Tetsuro; Inanaga, Takugi; and Takahashi, Akira, 4,609,164, Cl. 242-199.000.
Suemitsu, Takashi; Suzuki, Shinichi; and Niriki, Takashi, 4,609,259, Cl. 350-417.000.
Takaki, Hisashi; and Matsushita, Fumio, 4,609,886, Cl. 332-19.000.

Pioneer Video Corporation: *See—*
Okano, Takashi, 4,609,948, Cl. 358-338.000.

Piro, Ralph R. Pat on the back apparatus. 4,608,967, Cl. 128-61.000.

Pistor, Helmut H., to United States of America, Army. Cabinet mounted printed circuit board electrical connector. 4,609,240, Cl. 339-17.0LM.

Pitney Bowes Inc.: *See—*
Muller, Arno, 4,608,923, Cl. 101-91.000.

Pizzino, Joanne L. Dual syringe for either simultaneous or sequential injection of liquids. 4,609,371, Cl. 604-191.000.

Plasse, Paul A., to Polaroid Corporation. Laminar batteries and methods of making the same. 4,609,597, Cl. 429-122.000.

Platt, Graham M.: *See—*
Gahura, Andrew; and Platt, Graham M., 4,608,880, Cl. 74-479.000.

Plugge, John R.: *See—*
Guy, Arthur L.; and Plugge, John R., 4,609,307, Cl. 405-211.000.

Plum Kemi Produktion A/S: *See—*
Katva, Ilmari, 4,609,130, Cl. 222-207.000.

Plummer, Ernest L., to FMC Corporation. 2-(alpha-perhaloalkylbenzyloxy)pyridyl insecticide intermediates. 4,609,732, Cl. 546-269.000.

Po Loi Chu, Paul: *See—*
Moller, Ole H.; and Po Loi Chu, Paul, 4,610,004, Cl. 365-230.000.

Podvin, T. Charles; and Van Benschoten, Peter J., to Micromanipulator Microscope Company, Inc., The. Apparatus for positioning flat objects for microscopic examination. 4,609,264, Cl. 350-529.000.

Poehlsen, Rudolf H.: *See—*
Irwin, Christopher; and Poehlsen, Rudolf H., 4,609,340, Cl. 425-532.000.

Pohl, Andreas. Frameless high pressure platen press. 4,608,922, Cl. 100-264.000.

Polaroid Corporation: *See—*
Plasse, Paul A., 4,609,597, Cl. 429-122.000.

Polla, Dennis L.: *See—*
Muller, Richard S.; and Polla, Dennis L., 4,608,865, Cl. 73-204.000.

Pollard, Clifford W. Forceps. 4,608,982, Cl. 128-321.000.

Pollet, Jean-Claude; Armstrong, Gordon P.; and Flautt, Martin C., to Owens-Corning Fiberglas Corporation. Non-aqueous coating for glass fibers and glass fibers coated therewith. 4,609,591, Cl. 428-391.000.

Pomeroy, William F.: *See—*
Wilson, Robert B.; Pomeroy, William F.; and Sovey, Louis T., Jr., 4,609,375, Cl. 8-506.000.

Pommer, Karl E., II, to GTE Communication Systems Corp. Analog process controller with digital monitor. 4,609,864, Cl. 323-267.000.

Poncy, George W. Beverage can with sanitary reclosable lid. 4,609,123, Cl. 220-258.000.

Ponsford, Roger J.; and Howarth, Thomas T., to Beecham Group p.l.c. Clavulanic acid ethers as antibacterial agents. 4,609,495, Cl. 540-349.000.

Popov, Mikhail I.: *See—*
Shostak, Valentin M.; Tolochko, Alexei I.; Volkov, Vasily P.; Maradudin, Georgy I.; Schekin, Nikolai G.; Popov, Mikhail I.; Shepelev; Dmitry N.; Matveev, Anatoly I.; Butnyakov, Alexandr I.; and Rzhavichev, Anatoly P., 4,610,016, Cl. 373-137.000.

Poppendiek, Heinz F.: *See—*
Sabin, Cullen M.; and Poppendiek, Heinz F., 4,608,832, Cl. 62-140.000.

Porps, Thomas A.; and Augustyn, James A. Firewood cutting support. 4,609,070, Cl. 182-18.000.

Porter, David L., to Ford Motor Company. Printed circuit switch for windshield wiper motor. 4,609,794, Cl. 200-24.000.

Porter, William H.; and McKean, Cynthia F., to Porter, William H. Adjustable overhang panel for building eave. 4,608,788, Cl. 52-64.000.

Postle, Stephen R.; and Long, William E., to Ciba Geigy AG. Pyrazolone compounds and a process for their manufacture. 4,609,620, Cl. 430-554.000.

Potters Industries, Inc.: *See—*
Giordano, John J.; Shawcross, Jeffrey P.; Fuchs, Alfred E.; and Dejaiffe, Robert, 4,609,587, Cl. 428-325.000.

Powell, Clois E.: *See—*
Gruber, Norma J.; and Powell, Clois E., 4,609,690, Cl. 523-334.000.

Powers, William H., to Badger Meter, Inc. Fluid flow control system with pulse driven electric control valve. 4,609,176, Cl. 251-30.040.

PPG Industries, Inc.: *See—*
Greigger, Barbara A.; and Dowbenko, Rostyslaw, 4,609,717, Cl. 528-45.000.
Rukavina, Thomas G., 4,609,703, Cl. 524-360.000.

Prater, Ernest W.; and Henry, Sidney M., Jr., to Southwest Metals, Inc. Fence structure and method for installation. 4,609,185, Cl. 256-65.000.

Pratt, Michael K.: *See—*
Rinderle, James R.; and Pratt, Michael K., 4,609,527, Cl. 419-32.000.

Premji, Zahirudeen: *See—*
Manes, Kenneth; Premji, Zahirudeen; and White, Edward, 4,609,105, Cl. 206-444.000.

Price, Joseph W.: *See—*
Adachi, Iwao P.; and Yamada, Yahiko, 4,609,258, Cl. 350-395.000.

Prichard, William W.: *See—*
Mabry, Melinda A.; Prichard, William W.; and Ziemecki, Stanislaw B., 4,609,636, Cl. 502-183.000.

Procter & Gamble Company, The: *See—*
Curro, John J.; Baird, James C.; Gerth, Donald L.; Vernon, George M.; and Linman, E. Kelly, 4,609,518, Cl. 264-504.000.

Products Research & Chemical Corp.: *See—*
Morris, Lester; Singh, Hakam; and Zook, Jonathan D., 4,609,762, Cl. 568-38.000.

Proficient Systems, Inc.: *See—*
Jackson, Samuel G., 4,608,725, Cl. 15-3.000.

Prows, Reed N.; and Nicholas, William J. Burrito machine. 4,608,919, Cl. 99-450.600.

PT Components, Inc.: *See—*
Baker, William A., 4,609,965, Cl. 361-160.000.

PTC Aerospace Inc.: *See—*
Brennan, Edward J., 4,609,166, Cl. 244-118.500.

Puglia, Wayne J.: *See—*
Morris, William M.; Witzel, Frank; Puglia, Wayne J.; Mackay, Donald A. M.; Clark, K. Warren; and Patanasinth, Kanit J., 4,609,543, Cl. 424-38.000.

Puma-Sportschuhfabriken Rudolf Dassler KG: *See—*
Cavanagh, Peter R., 4,608,768, Cl. 36-28.000.

Purin, Charles J., to Rockford Sports Products, Inc. Bowling glove. 4,608,720, Cl. 2-161.00A.

Quant, Wilton E., to Caterpillar Tractor Co. Mounting for a linkage arrangement. 4,609,322, Cl. 414-685.000.

Quarroz, Daniel, to Lonza Ltd. Process for the production of 2-hydroxypyridines from 2-pyridine carboxylic acid-N-oxides. 4,609,734, Cl. 546-290.000.

Queener, Carl A., to International Business Machines Corporation. Xerographic apparatus and process with backside photoconductor imaging. 4,609,280, Cl. 355-3.0DD.

Quilitsch, Herbert: *See—*
Giesing, Herbert; Koerner, Gotz; Kropac, Vaclay; Patzke, Hans-Jurgen; Quilitsch, Herbert; Rau, Harald; Schamberg, Eckehard; Spieker, Fritz; and Weitemeyer, Christian, 4,609,752, Cl. 556-457.000.

Quinton Instrument Company: *See—*
Albert, David E., 4,608,993, Cl. 128-663.000.

Quistrebert, Jean-Luc: *See—*
Labbe, Roland; and Quistrebert, Jean-Luc, 4,609,304, Cl. 405-170.000.

Rabaey, Dirk H. L. C.; and Haspeslagh, Didier R., to International Standard Electric Corporation. Pulse code modulation translators. 4,610,018, Cl. 375-25.000.

Racal Data Communications Inc.: *See—*
Miller, William J.; and Lu, Chun C., 4,609,788, Cl. 179-170.600.

Radi, Gabor L.: *See—*
Ellis, Larry G.; and Radi, Gabor L., 4,608,907, Cl. 89-1.815.

Radisch, Helmer; and Scholz, Werner, to Saint-Gobain Vitrage. Transparent, anti-fogging coating comprised of plastic material containing a surface active agent. 4,609,688, Cl. 523-169.000.

Ragnmark, Karl-Goran B., to Atlas Copco Aktiebolag. Hammer tool. 4,609,053, Cl. 173-104.000.

Ralls, Gene R., to T. D. Williamson, Inc. Precise alignment adapter flange. 4,609,209, Cl. 285-24.000.

Ramachandran, Pallassana N.; Schramm, Charles J., Jr.; Lazecky, H. Peter; and Reinish, Martin D., to Colgate Palmolive Company. Bentonite-sulfate fabric softening particulate agglomerate, processes for manufacture and use thereof, and detergent compositions containing it. 4,609,473, Cl. 252-8.600.

Ranke, Gerhard; and Weiss, Horst, to Linde Aktiengesellschaft. Multiple temperature level regeneration of CO_2 from physical solvent. 4,609,384, Cl. 55-40.000.

Rao, Raghavendra: *See—*
Edeling, Martin; Mund, Konrad; Rao, Raghavendra; and Weidlich, Erhard, 4,609,508, Cl. 264-29.600.

Rasquin, Andre : *See—*
Skenazi, Andre ; Coutsouradis, Dimitri; and Rasquin, Andre , 4,609,529, Cl. 420-516.000.

Rathbun, Melvin R., to Lemont Machine Company. Dedimpler apparatus. 4,608,846, Cl. 72-111.000.

Rau, Harald: *See—*
Giesing, Herbert; Koerner, Gotz; Kropac, Vaclay; Patzke, Hans-Jurgen; Quilitsch, Herbert; Rau, Harald; Schamberg, Eckehard; Spieker, Fritz; and Weitemeyer, Christian, 4,609,752, Cl. 556-457.000.

Raudys, Vytas A.: *See—*
Kupcikevicius, Vytautas; and Raudys, Vytas A., 4,608,730, Cl. 17-41.000.

Raven, Cornelis W.: *See—*
Paerels, Gerard B.; and Raven, Cornelis W., 4,609,753, Cl. 560-13.000.

Ray, Jimmy C.; and Mathews, H. Wayne, to Communications Technology Corporation. Verification via cable analyzer. 4,609,789, Cl. 179-175.20D.

Raychem Corporation: *See—*
Soni, Pravin L.; and Farrar, Nigel R., 4,609,845, Cl. 310-357.000.

Rayovac Corporation: *See—*
Fleischer, Niles A., 4,608,753, Cl. 29-623.100.

RCA Corporation: *See—*
Fairbanks, David W., 4,609,187, Cl. 269-8.000.
Hawrylo, Frank Z., 4,609,139, Cl. 228-170.000.
Hedel, Rudolph H.; and Dischert, William A., 4,609,094, Cl. 198-380.000.
Kumar, Mahesh, 4,609,889, Cl. 333-100.000.
Pampalone, Thomas R.; Khan, Ahmad H.; and DiPiazza, James J., 4,609,614, Cl. 430-323.000.
Samuels, Gerard, 4,609,285, Cl. 355-75.000.
White, Lawrence K.; and Maa, Jen-shen, 4,609,447, Cl. 204-192.00E.

Redzinski, Gilbert E., to Clark Equipment Company. Elective automatic shift transmission. 4,608,873, Cl. 74-866.000.

Reed, James M. Calf, ankle and foot protector for baseball batters. 4,608,718, Cl. 2-22.000.

Reed, Katherine E., to Minnesota Mining and Manufacturing Company. Resin-coated extensible heat-set fiberglass knit tape. 4,609,578, Cl. 428-76.000.

Reese, Dirk: *See—*
Rigler, Josef K.; Reese, Dirk; and Leithauser, Horst, 4,609,512, Cl. 264-53.000.

Rehak, James R.: *See—*
Rowland, Arlene N., 4,609,348, Cl. 433-2.000.

Reich, Ronald A., to Aluminum Company of America. System for monitoring pH in oil in water liquids. 4,609,874, Cl. 324-438.000.

REICH Spezialmaschinen GmbH: *See—*
Noizet, Erwin, 4,608,892, Cl. 83-168.000.

Reinish, Martin D.: *See—*
Ramachandran, Pallassana N.; Schramm, Charles J., Jr.; Lazecky, H. Peter; and Reinish, Martin D., 4,609,473, Cl. 252-8.600.

Reinking, Klaus: *See—*
Meyer, Rolf-Volker; Reinking, Klaus; Idel, Karsten-Josef; and Dhein, Rolf, 4,609,699, Cl. 524-100.000.

Reisberg, Joseph; Verkouw, Hendrik T.; and Bolsman, Theodorus A. B. M., to Shell Oil Company. Aqueous organic sulfonate surfactant systems containing phenylethersulfonate cosurfactants. 4,609,474, Cl. 252-8.55D.

Remme, LeRoy A. Archers exerciser. 4,609,191, Cl. 272-137.000.

Renaud, Pierre, to Valeo. Multiple clutch cover assembly. 4,609,085, Cl. 192-70.230.

Renault Automation: *See—*
De Filippis, Christian, 4,609,137, Cl. 228-47.000.

Renoult, Patrick, to Compagnie d'Electronique et de Piezo-Electricite C.E.P.E. Device providing compensation for acceleration sensitivity of an oscillator. 4,609,885, Cl. 331-158.000.

Repligen Corporation: *See—*
Herlihy, Walter C., 4,609,544, Cl. 424-59.000.

Rettig, Vernon E.: *See—*
Steilen, Ronald M.; Myers, John R.; and Rettig, Vernon E., 4,609,203, Cl. 280-461.00A.

Rettke, Wilfried: *See—*
Hubner, Manfred; and Rettke, Wilfried, 4,609,297, Cl. 400-187.000.

Revici, Emanuel, to Avram, Elena. Method for terminating pregnancy. 4,609,552, Cl. 424-164.000.

Reynolds, Don E.; and Kilby, James D., to Olin Corporation. Process for removal of alkali metal chlorate from alkali metal chloride brines. 4,609,472, Cl. 210-750.000.

Rhodes, James; Wren, Michael; Lantz, Paul W.; and Acock, George W., Jr., to James A. Rhodes & Associates. Environmentally controlled building. 4,608,785, Cl. 52-2.000.

Rhodia Aktiengesellschaft: *See—*
Erkens, Walter, 4,609,915, Cl. 340-671.000.

Rhone-Poulenc Industries: *See—*
Gauthier-Lafaye, Jean; and Perron, Robert, 4,609,504, Cl. 260-549.000.

Ribarov, Hristo M.: *See—*
Hristozov, Vladislav N.; Ribarov, Hristo M.; Marchev, Zdravko B.; Markov, Spas N.; and Valev, Atanas A., 4,609,108, Cl. 209-581.000.

Riccitelli, Ivan, to Paolo Conti and Meritex S.r.I. Method and machine for knitting garments having legs and a body portion. 4,608,840, Cl. 66-30.000.

Rice, Steven T.: *See—*
Crivello, James V.; and Rice, Steven T., 4,609,705, Cl. 524-779.000.

Richards, Ernie; and Bluzer, Nathan, to United States of America, Air Force. Energizing arrangement for charge coupled device control electrodes. 4,610,019, Cl. 377-58.000.

Richardson-Vicks Inc.: *See—*
Gupte, Anil J., 4,609,674, Cl. 514-547.000.

Richert, Jean-Luc: *See—*
Braunstein, Pierre; Kervennal, Jacques; Richert, Jean-Luc; and Ries, Michel, 4,609,639, Cl. 502-326.000.

Richter, Konrad J., Sr., to Heinemann Electric Company. Retaining device for mounting electrical units. 4,609,119, Cl. 220-3.500.

Ricoh Company, Ltd.: *See—*
Kubo, Keishi; Takigawa, Nobuhiro; and Kawamura, Eiichi, 4,609,928, Cl. 346-208.000.

Riedel, Tomas: *See—*
Fritz, Hans-Gerhard; Schule, Helmut; Grunschloss, Eberhard; Riedel, Tomas; and Maier, Karl, 4,609,382, Cl. 51-298.000.

Riedesel, Roland G., Jr.: *See—*
Cox, Percy T.; Meador, Richard A.; Riedesel, Roland G., Jr.; and Savage, Kerry D., 4,609,873, Cl. 324-338.000.

Rieger, Martin M., to Warner-Lambert Company. Non-steroidal anti-inflammatory compounds and compositions thereof. 4,609,677, Cl. 514-679.000.

Ries, Michel: *See—*
Braunstein, Pierre; Kervennal, Jacques; Richert, Jean-Luc; and Ries, Michel, 4,609,639, Cl. 502-326.000.

Rieter Machine Works, Ltd.: *See—*
Flueli, Adolf, 4,609,159, Cl. 242-18.0DD.

Rigler, Josef K.; Reese, Dirk; and Leithauser, Horst, to Chemische Werke Huls AG. Process for controlling bead size in the manufacture

of expandable styrene polymers by suspension polymerization. 4,609,512, Cl. 264-53.000.

Riitano, Francesco. Rigid dental tool provided with inner guide core for carrying out the reaming and rectification of dental root canals. 4,609,352, Cl. 433-102.000.

Riken Vitamin Company, Ltd.: *See*—
Yuda, Mitsuharu; Sakka, Hiroshi; Yamada, Kenichi; Koizumi, Yoshihito; and Yamaguchi, Takeshi, 4,609,560, Cl. 426-653.000.

Rinderle, James R.; and Pratt, Michael K. Powder consolidation and machining. 4,609,527, Cl. 419-32.000.

Rinkewich, Isaac. Water irrigation apparatus and pipe construction particularly useful therein. 4,609,154, Cl. 239-713.000.

Ritschel, Werner; and Lorke, Horst, to Hoechst Aktiengesellschaft. Use of alkenylsuccinic acid half-amides as anticorrosion agents. 4,609,531, Cl. 422-13.000.

Rittle, Kenneth E.: *See*—
Evans, Ben E.; and Rittle, Kenneth E., 4,609,641, Cl. 514-16.000.

Ritzl, Hermann. Spectrometer. 4,609,289, Cl. 356-326.000.

Robbins, Gregory K., to Texaco Inc. Cathodic protection monitor system for submerged structures. 4,609,448, Cl. 204-197.000.

Robert Bosch GmbH: *See*—
Huber, Werner; and Leiber, Heinz, 4,608,870, Cl. 73-708.000.
Kemmner, Ulrich, 4,608,957, Cl. 123-467.000.
Ziegler, Bodo, 4,609,454, Cl. 204-427.000.

Robert, Jean-Edouard, to Snap Duroc. Adjustable wiper for fluid product. 4,609,300, Cl. 401-122.000.

Robeson, Lloyd M.: *See*—
Harris, James E.; and Robeson, Lloyd M., 4,609,714, Cl. 525-471.000.

Rocaboy, Alain J.: *See*—
Bonjour, Eric L.; and Rocaboy, Alain J., 4,609,214, Cl. 285-47.000.

Roche, Aiden E., to Lockheed Missiles & Space Company, Inc. Rugged interferometer. 4,609,822, Cl. 250-352.000.

Rockett, Luann T.; Nielsen, David A.; Shipp, Peter W., Jr.; and Knopp, Greggory I., to Kimberly-Clark Corporation. Absorbent floor mat. 4,609,580, Cl. 428-198.000.

Rockford Sports Products, Inc.: *See*—
Purin, Charles J., 4,608,720, Cl. 2-161.00A.

Rockley, Mark G., to Microlytics, Inc. Process and apparatus for analyzing cutting from oil and gas wells. 4,608,859, Cl. 73-153.000.

Rockwell International Corporation: *See*—
Flynn, James M., 4,609,921, Cl. 343-411.000.
Wiegel, Roger E., 4,609,906, Cl. 340-347.00C.

Rodgers, Robert L., to Circuit Research Labs, Inc. Noise reduction system. 4,609,878, Cl. 330-136.000.

Rodrigue, Kenneth J.; and Worlow, Joe G., to Cameco Industries, Inc. Rotary piler system for sugar cane. 4,609,318, Cl. 414-132.000.

Rodrigues, Pedro; Bichsel, Heinz; and Wehner, Frank, to Swiss Aluminium Ltd. Process for manufacturing aluminum thin strip and foil having a large fraction of cube texture. 4,609,408, Cl. 148-2.000.

Rody, Jean: *See*—
Karrer, Friedrich; and Rody, Jean, 4,609,698, Cl. 524-99.000.

Roesler, Hermann, to Deutsche Industrieanlagen Gesellschaft mit beschraenkter Haftung Berlin. Gripping arrangement. 4,609,326, Cl. 414-736.000.

Rofin-Sinar Laser GmbH: *See*—
Martinen, Hinrich; Simonsson, Samuel S.; and Wirth, Peter, 4,610,014, Cl. 372-59.000.

Rogers, Bruce J., to Minnesota Mining and Manufacturing Company. Teleconferencing graphics apparatus and system. 4,609,779, Cl. 179-2.00R.

Rogers, Sterlie R. Method and apparatus for cleaning the screen inlet portion of a water well casing. 4,609,045, Cl. 166-312.000.

Rogier, Edgar R.; Kanten, H. Gordon; and Peerman, Dwight E., to Henkel Corportion. Polyamide from bis(aminomethyl)tricyclodecane. 4,609,723, Cl. 528-339.300.

Rohde, Ralph; Annen, Klaus; Neef, Gunter; Wiechert, Rudolf; Beier, Sybille; Elger, Walter; and Henderson, David, to Schering Aktiengesellschaft. 11β-arylestradienes, their production, and pharmaceutical preparations containing same. 4,609,651, Cl. 514-179.000.

Rohm Company Limited: *See*—
Asai, Kachio; and Tsuruga, Yuji, 4,609,863, Cl. 323-223.000.

Rohm, Gunter H. Hammer-drill chuck with adjustable axial play. 4,609,199, Cl. 279-1.00B.

Rohner, Joachim; Mauries, Reinhard; and Zumfeld, Heinz, to W. Schlafhorst & Co. Compressed-air thread splicing device. 4,608,815, Cl. 57-22.000.

Rohr, Carol B., to Carol Block Limited. Method and apparatus for photoepiltion. 4,608,978, Cl. 128-303.100.

Rohr, Thomas-Markus; and Kuhn, Jakob, to Ciba Geigy AG. UV-absorbent compounds, process for their preparation and their use as image dyes in photographic materials for the silver dye bleach process. 4,609,609, Cl. 430-146.000.

Rokach, Joshua: *See*—
Young, Robert N.; Rokach, Joshua; Williams, Haydn R.; Kakushima, Masatoshi; and Guindon, Yvan, 4,609,744, Cl. 549-402.000.

Rollwitz, William L., to Southwest Research Institute. Method for in-vivo NMR measurements in the human breast to screen for small breast cancer in an otherwise healthy breast. 4,608,991, Cl. 128-653.000.

Romer, Rudolf; Boecker, Juergen; Klein, Klaus W.; Gersbach, Klaus; Winkelmann, Jurgen; and Rossmann, Winfried. Segmented sabot. 4,608,927, Cl. 102-521.000.

Rommel, Reiner. Plier type tool with motion compelling mechanism. 4,608,888, Cl. 81-313.000.

Rosborough, Keith A.: *See*—
Lavigne, Vernon W.; Rosborough, Keith A.; and Lau, Frederick L., 4,609,795, Cl. 200-61.190.

Rosell, Jorge E., to Bendiberica S.A. Assisted steering mechanism with rack and pinion. 4,608,876, Cl. 74-388.0PS.

Rosini, Paolo, to SGS-ATES Componenti Elettronici S.p.A. RAM memory cell with electrically programmable non-volatile memory element. 4,609,999, Cl. 365-154.000.

Rosofsky, Paul M., to Oral Ease Inc. Gum massaging device with internal dispenser. 4,608,968, Cl. 128-62.00A.

Rossmann, Winfried: *See*—
Romer, Rudolf; Boecker, Juergen; Klein, Klaus W.; Gersbach, Klaus; Winkelmann, Jurgen; and Rossmann, Winfried, 4,608,927, Cl. 102-521.000.

Rostek, Paul M.: *See*—
Milby, Gregory H.; Daniel, Richard A.; and Rostek, Paul M., 4,609,829, Cl. 307-150.000.

Rosynsky, Victor: *See*—
Shimrock, Thomas; Rosynsky, Victor; Caridi, Theodore M.; Collins, John M.; and Koubek, Michael G., 4,609,563, Cl. 427-8.000.

Rothermel, William F.: *See*—
Coulter, Wallace H.; and Rothermel, William F., 4,609,017, Cl. 141-1.000.

Rothfuss, Robert G.; and Kuhl, David K., to Senmed, Inc. Surgical stapling instrument with staple height adjusting mechanism. 4,608,981, Cl. 128-305.000.

Rothkegel, Bernhard: *See*—
Schreiner, Horst; and Rothkegel, Bernhard, 4,609,525, Cl. 419-6.000.

Rothlisberger, Henri C., to Les Services de Consultation D.B. Plus Limitee. Process for producing isopropyl alcohol from cellulosic substrates. 4,609,624, Cl. 435-157.000.

Rotman, Avner, to Yeda Research and Development Company Ltd. Derivatives of fluorescein. 4,609,740, Cl. 549-223.000.

Rouaud, Christian: *See*—
Abbes, Claude; Rouaud, Christian; Valla, Jean; de Villepoix, Raymond; Demay, Robert; and Forges, Robert, 4,609,211, Cl. 285-325.000.

Rovira, Juan: *See*—
Abel, Joachim; and Rovira, Juan, 4,609,239, Cl. 339-15.000.

Rowland, Arlene N., to Rehak, James R. Mouth and cheek protector. 4,609,348, Cl. 433-2.000.

Roxor Corporation: *See*—
Blom, C. James, 4,609,266, Cl. 350-613.000.

Roy, Gerald A., Jr.: *See*—
Nicholson, Michael D.; and Roy, Gerald A., Jr., 4,609,398, Cl. 71-93.000.

Roy, Gerald L., to Kerr Glass Manufacturing Corporation. Safety closure with nested caps. 4,609,114, Cl. 215-220.000.

Royston Corporation: *See*—
White, O. Timothy, 4,608,773, Cl. 40-606.000.

Rubin, Richard H. Flexible workpiece transporter and roller assembly therefor. 4,609,320, Cl. 414-225.000.

Rucman, Rudolf: *See*—
Jurgec, Milan; Rucman, Rudolf; Stanovnik, Branko; and Tisler, Miha, 4,609,731, Cl. 544-346.000.

Rudi, Guttorm, to Tandberg Data A/S. Device for positioning a magnetic head to various tracks of a magnetic tape. 4,609,959, Cl. 360-106.000.

Ruhmann, Douglas C.; Britton, Ralph A.; Mundloch, James D.; and Vorwerk, Frederick E., to ACF Industries, Incorporated. Filament wound railway hopper car. 4,608,931, Cl. 105-248.000.

Ruhrkohle AG: *See*—
Wild, Walter; and Peters, Albert, 4,609,227, Cl. 299-93.000.

Rukavina, Thomas G., to PPG Industries, Inc. Cyanoethylacrylate/acrylic acid copolymer. 4,609,703, Cl. 524-360.000.

Rummel, Wolfram, to Webasto-Werk W. Baier GmbH & Co. Air-conditioning system for vehicles. 4,608,834, Cl. 62-244.000.

Runkel, Walter; Lenk, Erich; and Bauer, Karl, to Barmag Barmer Maschinenfabrik AG. Yarn heating chamber. 4,609,344, Cl. 432-59.000.

Ruppert, Werner: *See*—
Lennemann, Eckart; and Ruppert, Werner, 4,609,818, Cl. 250-234.000.

Russell, David A.: *See*—
Breidenthal, Robert E.; Lotz, Daniel E.; and Russell, David A., 4,608,979, Cl. 128-303.100.

Russo, William P., to Foster Wheeler Energy Corporation. Tension solar mirror. 4,608,964, Cl. 126-438.000.

Ruston, Donald A.: *See*—
Campbell, James R., 4,608,845, Cl. 72-44.000.

Ryabinsky, Filipp G.: *See*—
Scheglov, Jury A.; Koval, Nikolai P.; Furer, Leonid A.; Zargarian, Sergei Y.; Skimbov, Anatoly A.; Belik, Vladimir G.; Zharik, Boris N.; Papchenko, Andrei Y.; Ryabinsky, Filipp G.; Sergeev, Alexandr S., deceased; and Sergeeva, Galina A., administrator, 4,608,920, Cl. 99-451.000.

Ryan, Philip J.; and McKee, Harris B., to Frito-Lay, Inc. Apparatus and method for case packing flexible bags. 4,608,808, Cl. 53-436.000.

Ryan, Stewart R. Detector system for detecting air infiltration leaks and the like. 4,609,912, Cl. 340-603.000.

Rzhavichev, Anatoly P.: *See*—
Shostak, Valentin M.; Tolochko, Alexei I.; Volkov, Vasily P.; Maradudin, Georgy I.; Schekin, Nikolai G.; Popov, Mikhail I.; Shepelev, Dmitry N.; Matveev, Anatoly I.; Butnyakov, Alexandr I.; and Rzhavichev, Anatoly P., 4,610,016, Cl. 373-137.000.

S. Eisenberg & Co., Div. of Creative Industries, Inc.: *See*—
Lake, Connie, 4,609,141, Cl. 229-2.5EC.

Sabin, Cullen M.; and Poppendiek, Heinz F., to Geoscience, Ltd. Means and techniques useful in detecting frost. 4,608,832, Cl. 62-140.000.

Sack, Werner, to Schott Glaswerke. Glass compositions with low dielectric losses. 4,609,632, Cl. 501-61.000.

Safe Flight Instrument Corporation: *See*—
Greene, Leonard M., 4,609,987, Cl. 364-433.000.

Sage, Burton H., Jr., to Becton, Dickinson and Company. Dispersion prism for separation of wavelengths of spectrally rich light in a flow cytometry apparatus. 4,609,286, Cl. 356-73.000.

Sahlin International, Inc.: *See*—
Sphar, Cecil H., 4,609,324, Cl. 414-732.000.

Saijo, Yoshiaki: *See*—
Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, 4,609,000, Cl. 134-62.000.
Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, 4,609,001, Cl. 134-62.000.
Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, 4,609,002, Cl. 134-62.000.

Saint-Gobain Vitrage: *See*—
Radisch, Helmer; and Scholz, Werner, 4,609,688, Cl. 523-169.000.

St. Jude Children's Research Hospital: *See*—
Nemec, Josef, 4,609,644, Cl. 514-27.000.

Saito, Takao: *See*—
Odashima, Hisao; Saito, Takao; and Hirano, Yoshihiko, 4,609,594, Cl. 428-629.000.

Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, to Canon Kabushiki Kaisha. Photoconductive member having a germanium silicon photoconductor. 4,609,604, Cl. 430-57.000.

Sakaeda, Keiko: *See*—
Sashiki, Takashi; and Sakaeda, Keiko, 4,609,058, Cl. 177-1.000.

Sakaguchi, Keizo: *See*—
Ishikawa, Hiroshi; Oguro, Keisuke; Suzuki, Hiroshi; Kato, Akihiko; Okada, Teruya; Sakamoto, Shizuo; Nishimura, Iwao; and Sakaguchi, Keizo, 4,609,038, Cl. 165-104.120.

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Sakamoto, Shizuo: *See*—
Ishikawa, Hiroshi; Oguro, Keisuke; Suzuki, Hiroshi; Kato, Akihiko; Okada, Teruya; Sakamoto, Shizuo; Nishimura, Iwao; and Sakaguchi, Keizo, 4,609,038, Cl. 165-104.120.

Sakano, Toshiyuki: *See*—
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Kume, Toyohiko; Kurahashi, Yoshio; Isono, Kunihiro; Sakawa, Shinji; and Matsumoto, Noboru, 4,609,669, Cl. 514-399.000.

Sakka, Hiroshi: *See*—
Yuda, Mitsuharu; Sakka, Hiroshi; Yamada, Kenichi; Koizumi, Yoshihito; and Yamaguchi, Takeshi, 4,609,560, Cl. 426-653.000.

Sakoda, Yasuhiro, to Sharp Kabushiki Kaisha. Microwave oven door structure. 4,609,800, Cl. 219-10.55D.

Sakschek, Helmut W. Dispenser and method for dispensing hunting odors. 4,609,245, Cl. 239-36.000.

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Labeeuw, Bernard; and Salhi, Ali, 4,609,654, Cl. 514-206.000.

Sammells, Anthony F.; and Pa Ang, Peter G., to Texaco Inc. Means for reducing carbon dioxide to provide a product. 4,609,451, Cl. 204-265.000.

Samuels, Gerard, to RCA Corporation. Wafer support plate for photolithographic apparatus. 4,609,285, Cl. 355-75.000.

Sanders, James M.: *See*—
Hall, John B.; Sanders, James M.; and Siano, James N., 4,609,754, Cl. 560-178.000.

Sandoz Ltd.: *See*—
Hassspacher, Klaus, 4,609,664, Cl. 514-324.000.
Jurgec, Milan; Rucman, Rudolf; Stanovnik, Branko; and Tisler, Miha, 4,609,731, Cl. 544-346.000.
Koerte, Klaus, 4,609,727, Cl. 534-858.000.
Schaub, Fritz; and Schneider, Rupert, 4,609,668, Cl. 514-383.000.
Stadler, Paul; and Troxler, Franz, 4,609,657, Cl. 514-250.000.

Sangster, Bruce F. Video training system for simulataneously training a plurality of students. 4,609,358, Cl. 434-307.000.

Sanitra, Robert: *See*—
Coffey, Gerald P.; Curatolo, Benedict S.; and Sanitra, Robert, 4,609,722, Cl. 528-315.000.

Sanofi: *See*—
Labeeuw, Bernard; and Salhi, Ali, 4,609,654, Cl. 514-206.000.

Sanshin Kogyo Kabushiki Kaisha: *See*—
Sumino, Yoshitsugu; and Mizuno, Hiroichi, 4,609,361, Cl. 440-73.000.

Sanyo Electric Co., Ltd.: *See*—
Miyai, Kiyoshi; Uotani, Shuhei; and Tsunemine, Toyohiko, 4,609,281, Cl. 355-3.00R.

Sarnik, John M.: *See*—
Pane, Francis C., Jr.; Matthews, John A.; Wright, Richard R.; Sarnik, John M.; and Frasca, Thomas, 4,609,150, Cl. 239-397.500.

Sarracino, Marcello, to Societa' Cavi Pirelli S.p.A. Process and apparatus for vulcanizing the insulation of an electric cable. 4,609,509, Cl. 264-38.000.

Sarradin, Joel: *See*—
Percheron nee Guegan, Annick; Achard, Jean-Claude; Bronoel, Guy; and Sarradin, Joel, 4,609,599, Cl. 429-218.000.

Sasaki, Akira: *See*—
Hata, Hitoshi; Sasaki, Akira; and Yamada, Hisao, 4,609,480, Cl. 252-32.70E.

Sasaki, Masao; and Onodera, Kaoru, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic light-sensitive material. 4,609,618, Cl. 430-546.000.

Sasaki, Nobuyoshi, to M.C.L. Co., Ltd. System for sintering molds and for preparing cast products. 4,609,031, Cl. 164-270.100.

Sasaki, Toshio: *See*—
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Sasaoka, Michio: *See*—
Torii, Sigeru; Tanaka, Hideo; Sasaoka, Michio; Uto, Seiryu; and Kameyama, Yutaka, 4,609,438, Cl. 204-72.000.

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Sato, Minako: *See*—
Fujita, Akiharu; Sato, Minako; and Murakami, Masashige, 4,609,680, Cl. 521-48.000.

Sato, Mitsukuni: *See*—
Nishida, Shinji; Otsuka, Takashi; Nakamori, Yoshio; and Sato, Mitsukuni, 4,609,338, Cl. 425-149.000.

Sato, Seiji: *See*—
Yamagiwa, Kazuo; Nishitani, Kiyoshi; Takeuchi, Koichi; and Sato, Seiji, 4,609,947, Cl. 358-310.000.

Sato, Shinichi: *See*—
Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, 4,609,000, Cl. 134-62.000.
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Saulson, Stanley H.: *See*—
Beranek, William J.; and Saulson, Stanley H., 4,608,986, Cl. 128-786.000.

Savage, Kerry D.: *See*—
Cox, Percy T.; Meador, Richard A.; Riedesel, Roland G., Jr.; and Savage, Kerry D., 4,609,873, Cl. 324-338.000.

Savich, Peter P.; and Ziegelhoffer, Paul, to Union Carbide Corporation. Bag making machine and method. 4,609,367, Cl. 493-194.000.

Savoyet, Jean-Louis. Device for sampling and measuring the flow rate of a continuously or intermittently circulating liquid. 4,608,864, Cl. 73-202.000.

Sawada, Toshiaki: *See*—
Miyakawa, Kazuo; Osaki, Tatsuo; Sawada, Toshiaki; and Ishikawa, Kiichiro, 4,608,745, Cl. 29-408.000.

Sawazaki, Norikazu: *See*—
Chiba, Shu; and Sawazaki, Norikazu, 4,609,950, Cl. 360-29.000.

Sawyer, Patrick F., to Girlock Limited. Master cylinder constructions. 4,608,826, Cl. 60-547.100.

Scepter Manufacturing Company Limited: *See*—
Torokvei, Thomas E.; and Lepp, Wayne, 4,609,210, Cl. 285-114.000.

Schafer, Rolf, to Alcon Laboratories, Inc. Solution and method for removing inorganic and organic deposits from contact lenses. 4,609,493, Cl. 252-546.000.

Schamberg, Eckehard: *See*—
Giesing, Herbert; Koerner, Gotz; Kropac, Vaclay; Patzke, Hans-Jurgen; Quilitsch, Herbert; Rau, Harald; Schamberg, Eckehard; Spieker, Fritz; and Weitemeyer, Christian, 4,609,752, Cl. 556-457.000.

Scharf, James O.: *See*—
Himmelberger, John E.; and Scharf, James O., 4,609,416, Cl. 156-53.000.

Scharr, Thomas A.; and Winchell, Vern H., II, to Motorola, Inc. Semiconductor chip with direct-bonded external leadframe. 4,609,936, Cl. 357-68.000.

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Schawann, Jean C.; Caumont, Jean P.; and Falcimaigne, Jean, to Societe Nationale Elf Aquitaine (Production). Production riser foot and a process for implementing same. 4,609,046, Cl. 166-341.000.

Schedele, Helmut, to Siemens Aktiengesellschaft. Polarized electromagnetic miniature relay. 4,609,896, Cl. 335-80.000.

Scheglov, Jury A.; Koval, Nikolai P.; Furer, Leonid A.; Zargarian, Sergei Y.; Skimbov, Anatoly A.; Belik, Vladimir G.; Zharik, Boris N.; Papchenko, Andrei Y.; Ryabinsky, Filipp G.; Sergeev, Alexandr S., deceased; and by Sergeeva, Galina A., administrator. Electroplasmolyzer for processing vegetable stock. 4,608,920, Cl. 99-451.000.

Schekin, Nikolai G.: *See*—
Shostak, Valentin M.; Tolochko, Alexei I.; Volkov, Vasily P.; Maradudin, Georgy I.; Schekin, Nikolai G.; Popov, Mikhail I.; Shepelev, Dmitry N.; Matveev, Anatoly I.; Butnyakov, Alexandr I.; and Rzhavichev, Anatoly P., 4,610,016, Cl. 373-137.000.

Schenk, Hanspeter, to Givaudan Corporation. Tri- and tetra-substituted cyclohexen-1-methyl acetates as odorants. 4,609,491, Cl. 252-522.00R.

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Rohde, Ralph; Annen, Klaus; Neef, Gunter; Wiechert, Rudolf; Beier, Sybille; Elger, Walter; and Henderson, David, 4,609,651, Cl. 514-179.000.

Schiffers, Ulrich: *See—*
Goebel, Konrad; Muller, Rainer; and Schiffers, Ulrich, 4,608,818, Cl. 60-39.120.
Schiller, Barry. Snap connector, lever. 4,608,734, Cl. 24-104.000.
Schink, Helmut, to Siemens Aktiengesellschaft. Method for measuring electrical potentials at buried solid state matter. 4,609,867, Cl. 324-158.00D.
Schleimann-Jensen, Arne H. Device for measuring the liquid portion of a two-phase flow of gas and liquid. 4,608,871, Cl. 73-861.040.
Schlesinger GmbH & Co. Maschinenbau KG: *See—*
Bickel, Wolfgang, 4,609,228, Cl. 300-4.000.
Schlossman, Mitchell L. Compressing aid for compressing powders. 4,609,545, Cl. 424-63.000.
Schlumberger Technology Corporation: *See—*
Upchurch, James M., 4,609,005, Cl. 137-68.100.
Schmid, Richard G.: *See—*
Campisi, Carl; and Schmid, Richard G., 4,609,319, Cl. 414-224.000.
Schmidt, Hans: *See—*
Ozawa, Lyuji; Schmidt, Hans; Hsu, Mike; and Perlmutter, Arye, 4,608,994, Cl. 128-670.000.
Schmidt, Manfred: *See—*
Weber, Christian; Konig, Klaus; and Schmidt, Manfred, 4,609,682, Cl. 521-117.000.
Schmidt, William J.: *See—*
Jurjevic, Richard A.; and Schmidt, William J., 4,609,014, Cl. 138-45.000.
Schmitt, Kirk D., to Mobil Oil Corporation. Method for manufacture of polymeric pyrrolidinium methanesulfonate viscosifiers. 4,609,708, Cl. 525-61.000.
Schnabl, Ludwig. Fastening element. 4,609,170, Cl. 248-71.000.
Schneider, Gottfried: *See—*
Peschka, Walter; Schneider, Gottfried; and Nieratschker, Willi, 4,608,830, Cl. 62-7.000.
Schneider, Richard C.: *See—*
Adler, Roy L.; Franaszek, Peter A.; Hassner, Martin; and Schneider, Richard C., 4,609,907, Cl. 340-347.0DD.
Schneider, Rupert: *See—*
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Schneller, Inc.: *See—*
Kyle, Robert L.; and Cardis, Donald R., 4,609,514, Cl. 264-153.000.
Schols, John A.; and Yu, KeeChung, to Dow Chemical Company, The. Low styrene emission vinyl ester resin employing drying oils for fiber-reinforced applications. 4,609,693, Cl. 523-465.000.
Scholz, Werner: *See—*
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Schon, Georg: *See—*
Geist, Michael; Ott, Gunther; and Schon, Georg, 4,609,446, Cl. 204-181.700.
Geist, Michael; Ott, Gunther; and Schon, Georg, 4,609,691, Cl. 523-415.000.
Schonherr, Walter: *See—*
Eckhardt, Fritz; Helbig, Peter; and Schonherr, Walter, 4,609,977, Cl. 362-267.000.
Schossler, Willi: *See—*
Behre, Horst; Blank, Heinz U.; and Schossler, Willi, 4,609,503, Cl. 260-509.000.
Schott Glaswerke: *See—*
Sack, Werner, 4,609,632, Cl. 501-61.000.
Schrader, Marguerite D., to Dow Chemical Company, The. Bulk heat or cold storage device for thermal energy storage compounds. 4,609,036, Cl. 165-10.000.
Schramm, Charles J., Jr.: *See—*
Ramachandran, Pallassana N.; Schramm, Charles J., Jr.; Lazecky, H. Peter; and Reinish, Martin D., 4,609,473, Cl. 252-8.600.
Schramm, Dale E.; and Scott, Oscar T., IV, to J. M. Huber Corporation. Reactor feed tube adjustable mounting assembly and method. 4,609,532, Cl. 422-145.000.
Schreiber, Joachim: *See—*
Eisenbrand, Gerhard; and Schreiber, Joachim, 4,609,496, Cl. 260-397.400.
Schreiner, Horst; and Rothkegel, Bernhard, to Siemens Aktiengesellschaft. Cadmium-free silver and metal oxide composite useful for electrical contacts and a method for its manufacture. 4,609,525, Cl. 419-6.000.
Schroder, Klaus J.: *See—*
Schroder, Paul; Schroder, Klaus J.; and Kremheller, Herrmann, 4,609,345, Cl. 432-137.000.
Schroder, Paul; Schroder, Klaus J.; and Kremheller, Herrmann, to Ludwig Riedhammer GmbH. Tunnel kiln. 4,609,345, Cl. 432-137.000.
Schule, Helmut: *See—*
Fritz, Hans-Gerhard; Schule, Helmut; Grunschloss, Eberhard; Riedel, Tomas; and Maier, Karl, 4,609,382, Cl. 51-298.000.
Schulhof, Michael P., to Sony Corporation. Audio apparatus. 4,610,024, Cl. 381-103.000.
Schulman, Marvin; and Stevenson, Richard B., to General Foods Corporation. Seed separating apparatus and method. 4,609,110, Cl. 209-663.000.
Schulmerich Carillons, Inc.: *See—*
Mattern, Richard E., 4,609,853, Cl. 318-363.000.
Schulz, Max W., Jr.: *See—*
Grabkowski, Stephen E.; Schulz, Max W., Jr.; and Williamson, Robert D., 4,609,806, Cl. 219-95.000.
Schutte, Horst: *See—*
Leuchtenberger, Wolfgang; Hummel, Werner; Kula, Maria-Regina; and Schutte, Horst, 4,609,623, Cl. 435-130.000.
Schwab, Henry J. Burnishing floor polisher. 4,608,727, Cl. 15-98.000.
Schwabe, Peter; and Voigt, Reiner, to Bayer Aktiengesellschaft. Modified fillers for silicone dental pastes. 4,609,687, Cl. 523-109.000.
Schwam, Martin: *See—*
Boan, Bobby J.; Schwam, Martin; Sullivan, Marvin R.; and Morse, Amos W., 4,609,923, Cl. 343-897.000.
Schwamborn, Michael; Hagemann, Hermann; Heywang, Gerhard; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. Halogenoalkylcarbamic acid ester pesticides. 4,609,648, Cl. 514-84.000.
Schwartz, Abraham; Williams, Joel; and Stevens, Robert D., to Becton, Dickinson and Company. Method of preparing fluorescently labeled microbeads. 4,609,689, Cl. 523-202.000.
Schweickert, Thomas F.; and Orton, George F., to United States of America, Air Force. Propellant tank resupply system. 4,609,169, Cl. 244-169.000.
SCM Corporation: *See—*
Bode, Daniel; and DeGraaf, Henry J., 4,609,706, Cl. 525-7.400.
Scott, Dennis G.: *See—*
McKee, Clyde M.; Scott, Ward; Warren, Henry A.; and Scott, Dennis G., 4,609,265, Cl. 350-605.000.
Scott, Oscar T., IV: *See—*
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Scott, Peter B., to National Research Development Corporation. Artificial hand device. 4,609,220, Cl. 294-87.100.
Scott, Ward: *See—*
McKee, Clyde M.; Scott, Ward; Warren, Henry A.; and Scott, Dennis G., 4,609,265, Cl. 350-605.000.
Scozzafava, Michael: *See—*
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Secom Co., Ltd.: *See—*
Yasaki, Susumu; Ishiai, Yoshinori; Mitsushima, Susumu; and Nakamura, Takashi, 4,609,048, Cl. 169-61.000.
Segarra, Gerard, to U.S. Philips Corporation. Method of and device for allocating a token to stations of a communication network having at least two logic loops for the circulation of the token, each loop having an assigned priority. 4,609,920, Cl. 340-825.510.
Seijo, Takeyosi. Correction tape for copies. 4,609,585, Cl. 428-194.000.
Seiko Epson Corporation: *See—*
Deguchi, Hirokazu; Kojima, Kenji; and Mogami, Takao, 4,609,267, Cl. 351-163.000.
Nakamura, Haruo, 4,609,256, Cl. 350-346.000.
Shimodaira, Tadayoshi, 4,609,295, Cl. 400-88.000.
Seiko Instruments & Electronics Ltd.: *See—*
Yamazaki, Tsuneo, 4,609,930, Cl. 357-23.700.
Seiko Seiki Kabushiki Kaisha: *See—*
Miki, Masaharu; and Urano, Chiaki, 4,609,332, Cl. 417-352.000.
Seimiya, Kouichi; and Nakagami, Kenji, to Agency of Industrial Science and Technology; and Nakagami Kogyo Kabushiki Kaisha. Combined electrolytic-abrasive polishing apparatus. 4,609,450, Cl. 204-217.000.
Seita, Yukio: *See—*
Aoyagi, Juuro; Takahara, Kazuaki; and Seita, Yukio, 4,609,464, Cl. 210-321.300.
Sekella, Thomas C., to Facet Enterprises, Inc. Spring engaged double caliper disc brake. 4,609,080, Cl. 188-171.000.
Seki, Norio. Cup permitting easy drinking-up. 4,609,113, Cl. 215-1.00R.
Sekita, Katsuji: *See—*
Kogure, Tsuneo; Tsuchiyama, Yuji; Amano, Tadashi; Takahashi, Hideaki; Sekita, Katsuji; and Akami, Ichio, 4,608,852, Cl. 72-389.000.
Self, Henry L.; and Pickett, Teddy L., to United States of America, Navy. Hydraulic locking boltwork system. 4,609,215, Cl. 292-144.000.
Sember, James W.; and Walker, Loren H., to General Electric Company. Frequency measurement system. 4,609,990, Cl. 364-484.000.
Semmerling, Ralph P.: *See—*
Green, William J.; and Semmerling, Ralph P., 4,608,801, Cl. 52-664.000.
Senda, Atsuo; Kasanami, Tohru; and Nakagawa, Takuji, to Murata Manufacturing Co., Ltd. Process of heat treating copper film on ceramic body and heat treating apparatus therefor. 4,609,409, Cl. 148-13.000.
Senderowicz, Daniel: *See—*
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Senmed, Inc.: *See—*
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Sergeev, Alexandr S., deceased: *See—*
Scheglov, Jury A.; Koval, Nikolai P.; Furer, Leonid A.; Zargarian, Sergei Y.; Skimbov, Anatoly A.; Belik, Vladimir G.; Zharik, Boris N.; Papchenko, Andrei Y.; Ryabinsky, Filipp G.; Sergeev, Alexandr S., deceased; and Sergeeva, Galina A., administrator, 4,608,920, Cl. 99-451.000.
Sergeeva, Galina A., administrator: *See—*
Scheglov, Jury A.; Koval, Nikolai P.; Furer, Leonid A.; Zargarian, Sergei Y.; Skimbov, Anatoly A.; Belik, Vladimir G.; Zharik, Boris N.; Papchenko, Andrei Y.; Ryabinsky, Filipp G.; Sergeev, Alexandr S., deceased; and Sergeeva, Galina A., administrator, 4,608,920, Cl. 99-451.000.
Sesco, Inc.: *See—*
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Severin, Petrus J. W., to U.S. Philips Corporation. Position sensor having at least two layers of light conductors. 4,609,816, Cl. 250-227.000.

Seyler, Gerhard: *See—*
Born, Hans-Joachim; Duschka, Hartmut; Seyler, Gerhard; and Zerl, Wolfgang. 4,609,940, Cl. 358-111.000.

Seymour, Raymond K.; Morgan, Roger J.; and Gillette, Stephen F., to General Electric Company. Molded case circuit breaker having a thermoplastic cover. 4,609,898, Cl. 335-202.000.

Seynaeve, Fred A. Arrow rest in combination with bow. 4,608,959, Cl. 124-24.00R.

SGS-ATES Componenti Elettronici S.p.A.: *See—*
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SGS Microelettronica S.p.A.: *See—*
Nicollini, Germano; Senderowicz, Daniel; and Confalonieri, Pierangelo, 4,609,877, Cl. 330-9.000.

Shabram, Jeff: *See—*
Shabram, Lyle F., Jr.; Shabram, Jeff; Shabram, Paul; and Shabram, Kevin, 4,608,797, Cl. 53-504.000.

Shabram, Kevin: *See—*
Shabram, Lyle F., Jr.; Shabram, Jeff; Shabram, Paul; and Shabram, Kevin, 4,608,797, Cl. 53-504.000.

Shabram, Lyle F., Jr.; Shabram, Jeff; Shabram, Paul; and Shabram, Kevin, to Shabram, Lyle F., Jr. Automatic packaging machine. 4,608,797, Cl. 53-504.000.

Shabram, Paul: *See—*
Shabram, Lyle F., Jr.; Shabram, Jeff; Shabram, Paul; and Shabram, Kevin, 4,608,797, Cl. 53-504.000.

Shaffer, Jesse S., to North American Philips Corporation. Electrolytic capacitor with polymer conductor. 4,609,971, Cl. 361-433.000.

Shapiro, Arnold J.: *See—*
Khoobiar, Sargis; and Shapiro, Arnold J., 4,609,502, Cl. 558-320.000.

Sharon, Harold M., to United Technologies Corporation. Tool to produce a new leading edge on a fan blade. 4,608,756, Cl. 30-287.000.

Sharp Kabushiki Kaisha: *See—*
Gohda, Ken, 4,609,982, Cl. 363-89.000.
Ishii, Hiroshi, 4,609,857, Cl. 318-696.000.
Nakanishi, Yasuhiro; and Hatta, Koichi, 4,609,918, Cl. 340-753.000.
Sakoda, Yasuhiro, 4,609,800, Cl. 219-10.55D.
Taniguchi, Akihiko, 4,609,278, Cl. 355-3.0FU.

Shawcross, Jeffrey P.: *See—*
Giordano, John J.; Shawcross, Jeffrey P.; Fuchs, Alfred E.; and Dejaiffe, Robert, 4,609,587, Cl. 428-325.000.

Shea, John R., Jr., to Hordis Brothers, Inc. Multiple pane glass unit. 4,608,796, Cl. 52-399.000.

Shedigian, Vandos, to Emhart Industries, Inc. Dielectric fluid for a capacitor. 4,609,967, Cl. 361-315.000.

Shedigian, Vandos, to Emhart Industries, Inc. Dielectric fluid for metallized polypropylene film capacitors. 4,609,969, Cl. 361-323.000.

Shell Oil Company: *See—*
Bannell, John L. K.; and Paul, Donald M., 4,610,007, Cl. 367-104.000.
Clark, Michael T.; Munro, David; and Gilmore, Ian J., 4,609,394, Cl. 71-90.000.
Lau, Hon C., 4,609,044, Cl. 166-270.000.
Reisberg, Joseph; Verkouw, Hendrik T.; and Bolsman, Theodorus A. B. M., 4,609,474, Cl. 252-8.55D.

Shelton, John J., to Fife, Robert L. Servo valve. 4,609,012, Cl. 137-625.660.

Shen, Tsu Y., to Lexidata Corporation. Three-dimensional display system. 4,609,917, Cl. 340-729.000.

Shepelev, Dmitry N.: *See—*
Shostak, Valentin M.; Tolochko, Alexei I.; Volkov, Vasily P.; Maradudin, Georgy I.; Schekin, Nikolai G.; Popov, Mikhail I.; Shepelev, Dmitry N.; Matveev, Anatoly I.; Butnyakov, Alexandr I.; and Rzhavichev, Anatoly P., 4,610,016, Cl. 373-137.000.

Shepherd, Robin G., to John Wyeth & Brother, Ltd. Novel silyl reagents. 4,609,748, Cl. 556-410.000.

Sherman, Daniel A. Construction for roach traps. 4,608,774, Cl. 43-114.000.

Shiiba, Minoru: *See—*
Kohno, Atsuo; Shiiba, Minoru; and Kikuchi, Eishiroh, 4,609,270, Cl. 354-195.120.

Shikano, Yoshiro: *See—*
Higashino, Shigenori; Shikano, Yoshiro; and Katsuki, Kanji, 4,609,831, Cl. 307-270.000.

Shikiya, Hajime; Miki, Hiroyuki; Nakata, Yasuo; Hirata, Kazuo; and Ishiizumi, Seiichi, to Kubota, Ltd. Wheel drive structure for agricultural tractor. 4,609,065, Cl. 180-261.000.

Shimada, Yukio; Kato, Shizuo; and Tajima, Katsuichiro, to Nihon Radiator Co., Ltd. Intake unit. 4,608,914, Cl. 98-2.060.

Shimada, Yutaka: *See—*
Nakashima, Keishi; Hatanai, Takashi; Mukasa, Koichi; and Shimada, Yutaka, 4,609,593, Cl. 428-611.000.

Shimano Industrial Company Limited: *See—*
Shimano, Keizo, 4,608,878, Cl. 74-594.200.

Shimano, Keizo, to Shimano Industrial Company Limited. Reduced-weight gear crank. 4,608,878, Cl. 74-594.200.

Shimase, Akira: *See—*
Yamaguchi, Hiroshi; Shimase, Akira; Miyauchi, Tateoki; and Hongo, Mikio, 4,609,809, Cl. 219-121.0EM.

Shimizu, Atsushi: *See—*
Morioka, Mikio; and Shimizu, Atsushi, 4,609,530, Cl. 420-555.000.

Shimizu, Kyoichi, to Victor Company of Japan, Limited. Graphic display system having analog interpolators. 4,609,993, Cl. 364-522.000.

Shimizu, Sakayu: *See—*
Yamada, Hideaki; Shimizu, Sakayu; and Shiozaki, Shozo, 4,609,626, Cl. 435-195.000.

Shimizu, Toshihiko: *See—*
Omata, Kazuo; Shimizu, Toshihiko; Ibe, Hiroshi; and Hara, Kenji, 4,609,573, Cl. 427-403.000.

Shimodaira, Tadayoshi, to Seiko Epson Corporation. Hand-held printing calculator. 4,609,295, Cl. 400-88.000.

Shimomoto, Yasuharu: *See—*
Kusano, Chushirou; Ishioka, Sachio; Shimomoto, Yasuharu; Imamura, Yoshinori; and Ogawa, Hirofumi, 4,609,846, Cl. 313-384.000.

Shimomura, Setsuhiro, to Mitsubishi Denki Kabushiki Kaisha. Engine air/fuel ratio sensing device. 4,609,452, Cl. 204-425.000.

Shimomura, Setsuhiro, to Mitsubishi Denki Kabushiki Kaisha. Engine air/fuel ratio sensing device. 4,609,453, Cl. 204-425.000.

Shimosaki, Ryuji: *See—*
Yamazaki, Toshiaki; Nakadate, Takanori; Kitahara, Kenichi; Kobayashi, Morio; Fujimori, Noboru; and Shimosaki, Ryuji, 4,609,617, Cl. 430-535.000.

Shimrock, Thomas; Rosynsky, Victor; Caridi, Theodore M.; Collins, John M.; and Koubek, Michael G., to Engelhard Corporation. Metered charge system for catalytic coating of a substrate. 4,609,563, Cl. 427-8.000.

Shin, Kju H.; and Tatum, Edward F., to Ethyl Corporation. Unsymmetrical alkylated diphenolic compounds. 4,609,767, Cl. 568-722.000.

Shinagawa Shirorenga Kabushiki Kaisha: *See—*
Nishida, Shinji; Otsuka, Takashi; Nakamori, Yoshio; and Sato, Mitsukuni, 4,609,338, Cl. 425-149.000.

Shindo, Kenichiro: *See—*
Katoh, Kenji; Yamada, Toshio; Shindo, Kenichiro; Matsushita, Souichi; and Inoue, Tokuta, 4,608,956, Cl. 123-417.000.

Shinichi, Nishimura: *See—*
Nobuaki, Kitajima; Shinichi, Nishimura; and Susumu, Takahashi, 4,609,814, Cl. 250-201.000.

Shinko Electric Co., Ltd.: *See—*
Yasaki, Susumu; Ishiai, Yoshinori; Mitsushima, Susumu; and Nakamura, Takashi, 4,609,048, Cl. 169-61.000.

Shioda, Junji, to Brother Kogyo Kabushiki Kaisha. Tensioning means for printing ribbon cassette. 4,609,298, Cl. 400-208.000.

Shiozaki, Shozo: *See—*
Yamada, Hideaki; Shimizu, Sakayu; and Shiozaki, Shozo, 4,609,626, Cl. 435-195.000.

Shipp, Peter W., Jr.: *See—*
Rockett, Luann T.; Nielsen, David A.; Shipp, Peter W., Jr.; and Knopp, Greggory I., 4,609,580, Cl. 428-198.000.

Shirai, Shigeru; Kanbe, Junichiro; and Fukuda, Tadaji, to Canon Kabushiki Kaisha. Process of imaging an amorphous Si(C) photoconductive member. 4,609,601, Cl. 430-31.000.

Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, to Aisin Seiki Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Door window regulator. 4,608,778, Cl. 49-352.000.

Shirakawa, Toshifumi: *See—*
Hata, Go; Etoh, Takeaki; Shirakawa, Toshifumi; Matsuura, Yuji; and Uchiyama, Takashi, 4,609,492, Cl. 252-522.00R.

Shirasaki, Masataka, to Fujitsu Limited. Faraday rotator assembly. 4,609,257, Cl. 350-376.000.

Shirley, Graham J., to Automotive Products plc. Motor vehicle transmission having clutch operating hydraulic cylinder. 4,609,087, Cl. 192-85.0CA.

Shop-Vac Corporation: *See—*
Berfield, Robert C.; and Crevling, Robert L., 4,609,387, Cl. 55-320.000.

Shostak, Valentin M.; Tolochko, Alexei I.; Volkov, Vasily P.; Maradudin, Georgy I.; Schekin, Nikolai G.; Popov, Mikhail I.; Shepelev, Dmitry N.; Matveev, Anatoly I.; Butnyakov, Alexandr I.; and Rzhavichev, Anatoly P., to Vsesojuzny Nauchno-Issledovatelsky I Proektny Institut Po Ochistke Tekhnologicheskikh Gazov, Stochnykh Vod I Ispolzovaniju Vtorichnykh Energoresursov Predpriyaty Chernoi Metallurgii. Industrial furnace. 4,610,016, Cl. 373-137.000.

Showalter, Merle R., to Automotive Engine Associates. Abatement of NO_x from heterogeneous combustion sources by ultrahomogeneous air-EGR mixing. 4,609,342, Cl. 431-2.000.

Shredding Systems, Inc.: *See—*
Garnier, Thomas J., 4,609,155, Cl. 241-30.000.

Shumaker, O. R. Slip-form for concrete pathways. 4,609,303, Cl. 404-105.000.

Shuskus, Alexander J.; and Cowher, Melvyn E., to United Technologies Corporation. Plasma enhanced deposition of semiconductors. 4,609,424, Cl. 156-613.000.

Siano, James N.: *See—*
Hall, John B.; Sanders, James M.; and Siano, James N., 4,609,754, Cl. 560-178.000.

Sibley, John R.; Masters, James R.; and Squires, Oliver C. Pulsating flow scrubber attachment. 4,609,386, Cl. 55-223.000.

Siccardi, Frank J. Environmental control system for large volume structures. 4,609,346, Cl. 432-222.000.

Sicurelli, Robert J., Jr. Tongue therapy device. 4,608,974, Cl. 128-136.000.

Siemens Aktiengesellschaft: *See—*
Born, Hans-Joachim; Duschka, Hartmut; Seyler, Gerhard; and Zerl, Wolfgang, 4,609,940, Cl. 358-111.000.
Braun, Michael, 4,609,983, Cl. 363-98.000.

Edeling, Martin; Mund, Konrad; Rao, Raghavendra; and Weidlich, Erhard, 4,609,508, Cl. 264-29.600.
Edeling, Martin; and Gebhardt, Ulrich, 4,609,972, Cl. 361-433.000.
Gehring, Gerhard; and Hodlmayr, Franz, 4,609,882, Cl. 331-65.000.
Hausmann, Gerhard; Mugrauer, Hubert; and Naeser, Helmut, 4,609,279, Cl. 355-3.0SH.
Schedele, Helmut, 4,609,896, Cl. 335-80.000.
Schink, Helmut, 4,609,867, Cl. 324-158.00D.
Schreiner, Horst; and Rothkegel, Bernhard, 4,609,525, Cl. 419-6.000.

SIG Schweizerische Industrie-Gesellschaft: *See—*
Lenherr, Harald; and Deutschlander, Gert, 4,609,095, Cl. 198-460.000.

Sigyo, Masamiti; Wada, Minoru; and Takahashi, Yonosuke, to Fuji Photo Film Co., Ltd. Light information recording medium. 4,609,611, Cl. 430-270.000.

Silva, Jose H.: *See—*
Carr, Paul H.; and Silva, Jose H., 4,609,843, Cl. 310-313.00A.

Silver Seiko Ltd.: *See—*
Yui, Yoshikazu, 4,609,421, Cl. 156-442.100.

Silvetti, Brian M.: *See—*
MacCracken, Calvin D.; MacCracken, Mark M.; and Silvetti, Brian M., 4,608,836, Cl. 62-325.000.

Simm, Wolfgang; and Steine, Hans-Theo, to Castolin S.A. Powdered material for thermal spraying. 4,609,401, Cl. 75-252.000.

Simmel S.p.A.: *See—*
Pilotto, Italo; and Bozzetto, Gerardo, 4,609,118, Cl. 220-3.000.

Simms, Stanton E., to Calpine Containers, Inc. Produce bin. 4,609,116, Cl. 217-12.00R.

Simonsson, Samuel S.: *See—*
Martinen, Hinrich; Simonsson, Samuel S.; and Wirth, Peter, 4,610,014, Cl. 372-59.000.

Simpson Dura Vent Company, Inc.: *See—*
Townsend, Donald M.; and Jacklich, John R., 4,608,963, Cl. 126-307.00R.

Sims, Dewey M., Jr., to Northern Telecom Limited. Latching mechanism for a tape carrier. 4,609,955, Cl. 360-93.000.

Singer, Barry M.: *See—*
Jayaraman, Raj; and Singer, Barry M., 4,609,929, Cl. 357-23.400.

Singh, Hakam: *See—*
Morris, Lester; Singh, Hakam; and Zook, Jonathan D., 4,609,762, Cl. 568-38.000.

Skaltek AB: *See—*
Linderoth, Gustaf; and Ehn, Borje, 4,609,160, Cl. 242-54.00R.

Skenazi, Andre ; Coutsouradis, Dimitri; and Rasquin, Andre , to Centre de Recherches Metallurgiques. Zinc-based alloys with improved ductility. 4,609,529, Cl. 420-516.000.

Skimbov, Anatoly A.: *See—*
Scheglov, Jury A.; Koval, Nikolai P.; Furer, Leonid A.; Zargarian, Sergei Y.; Skimbov, Anatoly A.; Belik, Vladimir G.; Zharik, Boris N.; Papchenko, Andrei Y.; Ryabinsky, Filipp G.; Sergeev, Alexandr S., deceased; and Sergeeva, Galina A., administrator, 4,608,920, Cl. 99-451.000.

Skripalle, Werner, to Isover Saint-Gobain. Process for wrapping a rotating bale of a backed mineral fiber strip with a protective strip that is applied during winding of the bale, for packaging. 4,608,807, Cl. 53-399.000.

Slade, Randall: *See—*
Broadus, Ronnie J.; Slade, Randall; and Wegner, John W., 4,609,042, Cl. 166-187.000.

Sleigh, Neville J. H.: *See—*
Hill; Nigel; and Sleigh, Neville J. H., 4,609,308, Cl. 405-293.000.

Small, Charles B. Portable precision guide for powered hand tools. 4,608,761, Cl. 33-471.000.

Small, Irwin A. Method of applying a chin implant, drill guide tool and implant. 4,608,972, Cl. 128-92.0EB.

Small, Kenneth T., to Boschert Inc. Single wire current share paralleling of power supplies. 4,609,828, Cl. 307-44.000.

Smeltz, Kenneth C., to Du Pont de Nemours, E. I., and Company. Organic titanium compositions and their use as cross-linkers. 4,609,479, Cl. 252-8.551.

Smierciak, Richard C.: *See—*
Giordano, Paul, Jr.; and Smierciak, Richard C., 4,609,686, Cl. 522-31.000.

Smith, Franklin J., to Microdry Corporation. Capsule sealer and method of sealing. 4,609,417, Cl. 156-69.000.

Smith, Peter G.: *See—*
Charrier, Michael G.; and Smith, Peter G., 4,608,860, Cl. 73-115.000.

Smith, Stephen R.: *See—*
Lanham, William E., Jr.; and Smith, Stephen R., 4,608,961, Cl. 126-21.00A.

Smyth, Laurence C., to Wire Rope Industries Ltd. Method of making plastic filled wire rope. 4,609,515, Cl. 264-174.000.

Snap Duroc: *See—*
Robert, Jean-Edouard, 4,609,300, Cl. 401-122.000.

Snedeker, Nelson W. Shopping cart disabling device. 4,609,075, Cl. 188-5.000.

Sobel, Alvin A., to Coronet Paper Corporation. Reinforcement for magnetic recording disk. 4,609,964, Cl. 360-135.000.

Societa' Cavi Pirelli S.p.A.: *See—*
Sarracino, Marcello, 4,609,509, Cl. 264-38.000.

Societe Anonyme Chryso: *See—*
Couleau, Robert; and Guicquero, Jean P., 4,609,570, Cl. 427-135.000.

Societe Anonyme D.B.A.: *See—*
Mery, Jean-Claude, 4,609,079, Cl. 188-73.450.

Societe Anonyme Dite: Etablissements Montaz-Mautino: *See—*
Galmiche, Jean-Marie, 4,608,930, Cl. 104-180.000.

Societe de Fabrication d'Instruments de Mesure (S.F.I.M.): *See—*
Audren, Jean-Thierry, 4,608,874, Cl. 74-5.410.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A.: *See—*
Fondacci, Jean-Luc; and Francois, Yves-Marie M. R., 4,608,822, Cl. 60-242.000.

Societe Nationale Elf Aquitaine (Production): *See—*
Schawann, Jean C.; Caumont, Jean P.; and Falcimaigne, Jean, 4,609,046, Cl. 166-341.000.

Society for Biotechnical Research: *See—*
Leuchtenberger, Wolfgang; Hummel, Werner; Kula, Maria-Regina; and Schutte, Horst, 4,609,623, Cl. 435-130.000.

Soda Aromatic Company, Limited: *See—*
Hata, Go; Etoh, Takeaki; Shirakawa, Toshifumi; Matsuura, Yuji; and Uchiyama, Takashi, 4,609,492, Cl. 252-522.00R.

Solarchem Corporation: *See—*
Guillet, James E., 4,609,444, Cl. 204-157.600.

Solc, Jitka, to Dow Chemical Company, The. Colloidal size hydrophobic polymer particulate having discrete particles of a metal dispersed therein. 4,609,608, Cl. 430-106.600.

Solie, Leland P.; and Fredricksen, Hans P., to Sperry Corporation. Staggered SAW resonator for differential detection. 4,609,891, Cl. 333-195.000.

Soltis, Andrew P.: *See—*
Ustin, George; and Soltis, Andrew P., 4,609,246, Cl. 339-59.00M.

Soni, Pravin L.; and Farrar, Nigel R., to Raychem Corporation. Stretched piezoelectric polymer coaxial cable. 4,609,845, Cl. 310-357.000.

Sony Corporation: *See—*
Kutaragi, Ken, 4,609,949, Cl. 360-28.000.
Nakada, Yasuo; and Kato, Yukihiro, 4,609,944, Cl. 358-228.000.
Schulhof, Michael P., 4,610,024, Cl. 381-103.000.
Yamagiwa, Kazuo; Nishitani, Kiyoshi; Takeuchi, Koichi; and Sato, Seiji, 4,609,947, Cl. 358-310.000.

Sotonyi, Thomas; Webers, Heinz; and Elle, Erich, to Baustahlgewebe GmbH. Wire-lattice welding machine. 4,609,802, Cl. 219-56.000.

Southwest Metals, Inc.: *See—*
Prater, Ernest W.; and Henry, Sidney M., Jr., 4,609,185, Cl. 256-65.000.

Southwest Research Institute: *See—*
Rollwitz, William L., 4,608,991, Cl. 128-653.000.

Sovey, James S.: *See—*
Zavesky, Ralph J.; Sovey, James S.; Mirtich, Michael J.; Marinos, Charalampus; and Penko, Paul F., 4,608,821, Cl. 60-203.100.

Sovey, Louis T., Jr.: *See—*
Wilson, Robert B.; Pomeroy, William F.; and Sovey, Louis T., Jr., 4,609,375, Cl. 8-506.000.

Sovonics Solar Systems: *See—*
Doehler, Joachim; and Izu, Masatsugu, 4,608,943, Cl. 118-718.000.
Guha, Subhendu; and Kulman, James, 4,609,771, Cl. 136-249.000.

Spector, George: *See—*
Greene, Archibald L.; Greene, Gary L.; and Spector, George, 4,609,004, Cl. 137-38.000.

Spencer, Donald J.; and Larsen, Leonard O., to Whirlpool Corporation. Cavity construction for microwave oven. 4,609,801, Cl. 219-10.55R.

Spencer Wright Industries, Inc.: *See—*
Bardsley, Harold B., 4,608,935, Cl. 112-79.00A.

Sperry Corporation: *See—*
Solie, Leland P.; and Fredricksen, Hans P., 4,609,891, Cl. 333-195.000.
Strosser, Richard P.; and Bohman, Carl E., 4,609,984, Cl. 364-130.000.
Zweifel, Terry L., 4,609,988, Cl. 364-433.000.

Sphar, Cecil H., to Sahlin International, Inc. Horizontal loader/unloader. 4,609,324, Cl. 414-732.000.

Spiegel, Susan: *See—*
Lauer, Leonard; and Spiegel, Susan, 4,609,120, Cl. 220-69.000.

Spieker, Fritz: *See—*
Giesing, Herbert; Koerner, Gotz; Kropac, Vaclav; Patzke, Hans-Jurgen; Quilitsch, Herbert; Rau, Harald; Schamberg, Eckehard; Spieker, Fritz; and Weitemeyer, Christian, 4,609,752, Cl. 556-457.000.

Spielau, Paul: *See—*
Neuschaeffer, Karl H.; Spielau, Paul; Engels, Hans-Werner; and Zoche, Guenter, 4,608,795, Cl. 52-309.120.

Spiers, Barry. Modular building component for patio and deck floors, planters, benches and the like. 4,608,798, Cl. 52-581.000.

Spiro Investment A.G.: *See—*
Berglund, Bengt, 4,609,506, Cl. 261-44.00A.

Spranger, Kurt; and Beck, Bernd A. W., to Gambro Dialysatoren KG. Method of treating a cellulosic hollow fiber. 4,609,728, Cl. 536-56.000.

Spuhl AG: *See—*
Thoenen, Alan, 4,609,186, Cl. 267-91.000.

Spurny, Jiri: *See—*
Heckmann, Klaus; and Spurny, Jiri, 4,609,533, Cl. 42[illegible]18.000.

Squarci, Larry, to Hudson Valley Tree, Inc. Method and machine for manufacturing artificial branches. 4,609,989, Cl. 364-468.000.

Squires, Oliver C.: *See—*
Sibley, John R.; Masters, James R.; and Squires, Oliver C., 4,609,386, Cl. 55-223.000.

SRI International: *See—*
Green, Philip S., 4,608,868, Cl. 73-606.000.

Stadler, Hans, to Klockner-Humboldt-Deutz Aktiengesellschaft. Arrangement for cooling pistons and cylinder sleeves. 4,608,947, Cl. 123-41.390.

Stadler, Paul; and Troxler, Franz, to Sandoz Ltd. Ergot peptide alkaloid derivatives, processes for their preparation and pharmaceutical compositions containing them. 4,609,657, Cl. 514-250.000.

Stahle, Helmut: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, 4,609,672, Cl. 514-522.000.

Standard Oil Company, The: *See—*
Coffey, Gerald P.; Curatolo, Benedict S.; and Sanitra, Robert, 4,609,722, Cl. 528-315.000.
Giordano, Paul, Jr.; and Smierciak, Richard C., 4,609,686, Cl. 522-31.000.
Hardman, Harley F.; and Beach, Ronald I., 4,609,678, Cl. 518-713.000.
Tenhover, Michael A.; Henderson, Richard S.; Harris, Jonathan H.; Grasselli, Robert K.; and Ward, Michael D., 4,609,442, Cl. 204-95.000.

Standard Oil Company (Indiana): *See—*
Horecky, Carl J.; and Hirschberg, Eugene H., 4,609,539, Cl. 423-244.000.
Tolpin, Thomas W.; and Kretchmer, Richard A., 4,609,537, Cl. 423-244.000.

Stanish, Leo S.: *See—*
Turner, Larry G.; Stanish, Leo S.; Kuttruff, Manfred; Budzinski, Walter J.; and MacDonald, Robert, 4,609,177, Cl. 251-175.000.

Stanovnik, Branko: *See—*
Jurgec, Milan; Rucman, Rudolf; Stanovnik, Branko; and Tisler, Miha, 4,609,731, Cl. 544-346.000.

Stark, Antony A.: *See—*
Miller, Ronald E.; and Stark, Antony A., 4,610,032, Cl. 455-325.000.

Stasiak, Gunter: *See—*
Ley, Willy; and Stasiak, Gunter, 4,609,366, Cl. 493-22.000.

STEDEF S.A.: *See—*
Harmsen, John L., 4,609,144, Cl. 238-1.000.

Stedry, Bernd: *See—*
Geke, Jurgen; and Stedry, Bernd, 4,609,488, Cl. 252-344.000.

Stegmeier, Karlheinz: *See—*
Eggerer, Hermann; Hagenbruch, Bernd; Nguyen, Tran G.; Stegmeier, Karlheinz; and Pill, Johannes, 4,609,673, Cl. 514-542.000.

Steilen, Ronald M.; Myers, John R.; and Rettig, Vernon E., to Deere & Company. Hitch structure with variable link. 4,609,203, Cl. 280-461.00A.

Steinberger, Ned, to Steinberger Sound Corporation. Tuning system for stringed musical instrument. 4,608,904, Cl. 84-304.000.

Steinberger Sound Corporation: *See—*
Steinberger, Ned, 4,608,904, Cl. 84-304.000.

Steine, Hans-Theo: *See—*
Simm, Wolfgang; and Steine, Hans-Theo, 4,609,401, Cl. 75-252.000.

STEMA S.a.s. di Zorzetto Renato and Co.: *See—*
Zorzetto, Renato, 4,608,722, Cl. 5-18.00R.

Stengelin, Ernst, to Kloeckner Ferromatik Desma GmbH. Machine for the direct soling of shoe uppers. 4,608,724, Cl. 12-17.00R.

Sterling Faucet Company: *See—*
Uhl, John B., 4,609,007, Cl. 137-270.000.

Stevens, George L., to Thiokol Corporation. Swivel type through bulkhead initiator. 4,608,926, Cl. 102-275.400.

Stevens, Robert D.: *See—*
Schwartz, Abraham; Williams, Joel; and Stevens, Robert D., 4,609,689, Cl. 523-202.000.

Stevenson, James F.; Codispoti, Thomas E.; Griffith, Richard M.; and Hutch, Harry L., to GenCorp Inc. Apparatus and method for extrusion. 4,609,336, Cl. 425-135.000.

Stevenson, Richard B.: *See—*
Schulman, Marvin; and Stevenson, Richard B., 4,609,110, Cl. 209-663.000.

Stewart, Paul C., to Dresser Industries, Inc. Mining shovel ballast box connection method and apparatus. 4,608,743, Cl. 29-526.00R.

Stiftung Deutsches Krebsforshungszentrum: *See—*
Eisenbrand, Gerhard; and Schreiber, Joachim, 4,609,496, Cl. 260-397.400.

Still, Donald O.; Hovance, Hubert T.; and Burley, George J., to Firestone Tire & Rubber Company, The. Method of cutting elastomeric material. 4,608,890, Cl. 83-49.000.

Storage Technology Partners II: *See—*
Manes, Kenneth; Premji, Zahirudeen; and White, Edward, 4,609,105, Cl. 206-444.000.

Stork Brabant BV: *See—*
Zufang, Arthur A.; and Fabrie, Robert A. M. J., 4,609,423, Cl. 156-555.000.

Storz, Karl. Rod lens and endoscope including the same. 4,608,966, Cl. 128-4.000.

Stott, Herbert L.: *See—*
Hale, John D.; and Stott, Herbert L., 4,609,062, Cl. 177-256.000.

Strecker, Leopold R., to CPC International Inc. Refining of oil and product thereof. 4,609,500, Cl. 260-423.000.

Strosser, Richard P.; and Bohman, Carl E., to Sperry Corporation. Automatic baler with manual override of microprocessor controlled functions. 4,609,984, Cl. 364-130.000.

Stuhler, William B. Reactive attitude stabilization system. 4,609,083, Cl. 188-378.000.

Stumpp & Kurz GmbH & Co.: *See—*
Oettl, Reinhold, 4,609,316, Cl. 411-45.000.

Sturlaugson, Lee S. Shoe construction. 4,608,769, Cl. 36-68.000.

Suchy, Les, to CanOcean Resources, Ltd. Breathing protective apparatus with inhalation and exhalation regulator. 4,608,976, Cl. 128-204.260.

Suemitsu, Takashi; Suzuki, Shinichi; and Niriki, Takashi, to Pioneer Electronic Corporation. Process for producing micro Fresnel lens. 4,609,259, Cl. 350-417.000.

Suganuma, Yuichiro: *See—*
Kaiwa, Ryoichi; and Suganuma, Yuichiro, 4,609,790, Cl. 179-189.00R.

Sugimoto, Tadao; Yamada, Sumito; Ikeda, Tadashi; Takei, Haruo; and Okazaki, Masaki, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 4,609,621, Cl. 430-567.000.

Sugimoto, Yasuo: *See—*
Tanaka, Yoshio; and Sugimoto, Yasuo, 4,608,946, Cl. 123-2.000.

Sugita, Katsuhiko; and Sakano, Toshiyuki, to Tsudakoma Kogyo Kabushiki Kaisha. Method and apparatus for automatic running control of a loom. 4,609,858, Cl. 318-778.000.

Sugitani, Hiroshi: *See—*
Inamoto, Tadayoshi; Yokota, Masami; and Sugitani, Hiroshi, 4,609,427, Cl. 156-633.000.

Sugiura, Sabro; Hayashi, Kiyohide; Kanada, Kenji; Demukai, Noboru; and Okamoto, Tetsuo, to Daido Tokushuko Kabushiki Kaisha. Scrap heating method. 4,609,538, Cl. 423-244.000.

Sullivan, James V.: *See—*
Minton, Allen P.; Attri, Arun K.; Sullivan, James V.; and Fitze, Paul, 4,609,991, Cl. 364-499.000.

Sullivan, Marvin R.: *See—*
Boan, Bobby J.; Schwam, Martin; Sullivan, Marvin R.; and Morse, Amos W., 4,609,923, Cl. 343-897.000.

Sumino, Yoshitsugu; and Mizuno, Hiroichi, to Sanshin Kogyo Kabushiki Kaisha. Fish line and weed cutter for marine propeller. 4,609,361, Cl. 440-73.000.

Sumins, Edmund J.; and Baker, Roger W., to Trico Products Corporation. Wiper blade components. 4,608,728, Cl. 15-250.320.

Sumitomo Electric Industries, Ltd.: *See—*
Morioka, Mikio; and Shimizu, Atsushi, 4,609,530, Cl. 420-555.000.

Sumitomo, Hiroyuki: *See—*
Horiguchi, Akira; and Sumitomo, Hiroyuki, 4,608,829, Cl. 60-643.000.

Sumitomo Rubber Industries, Ltd.: *See—*
Kondoh, Kazuaki, 4,609,026, Cl. 157-13.000.

Summers, Charles F., to NL Industries, Inc. Testing for the presence of native hydrocarbons down a borehole. 4,609,821, Cl. 250-255.000.

Summers, David P.: *See—*
Frese, Karl W., Jr.; Leach, Steven C.; and Summers, David P., 4,609,440, Cl. 204-76.000.
Frese, Karl W., Jr.; Leach, Steven C.; and Summers, David P., 4,609,441, Cl. 204-77.000.

Sundstrand Corporation: *See—*
Aleem, Mohd A.; Flygare, Wayne A.; and Kruger, E. William, 4,609,842, Cl. 310-112.000.
Mehl, Byron R., 4,609,832, Cl. 307-270.000.

Sung, Rodney L.; and Crawford, Wheeler C., to Texaco Inc. Aminated polyisopropoxylated polyethoxylated alkylphenol and ethanol/gasoline blend composition containing same. 4,609,377, Cl. 44-56.000.

Suri, Jasbeer S.: *See—*
Dermitzakis, Stephan; Suri, Jasbeer S.; Krumrein, Gerhard; and Mischel, Peter, 4,609,880, Cl. 330-308.000.

Suroff, Hyman. Energy efficient apparatus. 4,609,826, Cl. 290-1.00R.

Sursum Elektrizitatsgesellschaft Leyhausen GmbH & Co.: *See—*
Westermeyer, Joseph, 4,609,895, Cl. 335-17.000.

Susumu, Takahashi: *See—*
Nobuaki, Kitajima; Shinichi, Nishimura; and Susumu, Takahashi, 4,609,814, Cl. 250-201.000.

Suzuki, Hiroshi: *See—*
Ishikawa, Hiroshi; Oguro, Keisuke; Suzuki, Hiroshi; Kato, Akihiko; Okada, Teruya; Sakamoto, Shizuo; Nishimura, Iwao; and Sakaguchi, Keizo, 4,609,038, Cl. 165-104.120.

Suzuki, Kunihiko; and Enomoto, Koji, to Nissan Motor Co., Ltd. Part-time four-wheel drive system with steering angle responsive control. 4,609,064, Cl. 180-233.000.

Suzuki, Michiya: *See—*
Hsieh, Kou-Chang; and Suzuki, Michiya, 4,609,978, Cl. 362-335.000.

Suzuki, Motoji: *See—*
Masaki, Kazuo; Suzuki, Motoji; and Nakashima, Noriyuki, 4,609,841, Cl. 310-75.00R.

Suzuki, Shinichi: *See—*
Suemitsu, Takashi; Suzuki, Shinichi; and Niriki, Takashi, 4,609,259, Cl. 350-417.000.

Suzuki, Shun: *See—*
Inaniwa, Masahiro; Suzuki, Shun; and Ogawa, Yoichi, 4,609,861, Cl. 320-32.000.

Suzuki, Susumu; and Kudo, Yukinori, to Tokyo Shibaura Denki Kabushiki Kaisha. Digital TV receiver with digital video processing circuit. 4,609,938, Cl. 358-26.000.

Suzuki, Toru, to Tokyo Kogaku Kikai Kabushiki Kaisha. Electronic flash system with control of commutation capacitor. 4,609,851, Cl. 315-241.00P.

Suzuki, Toshio; and Yamakawa, Kimio, to Toray Silicone Company, Ltd. Method of making a coated quartz optical communications fiber and the coated fiber obtained therefrom. 4,609,590, Cl. 428-378.000.

Sverdlin, Anatoly. Apparatus for in-situ crankshaft reconditioning. 4,609,312, Cl. 409-132.000.
Swats, Charles F.: *See—*
Dean, Edward H.; Doxey, Burnley R.; Diebler, Daniel T.; and Swats, Charles F., 4,609,168, Cl. 244-137.00A.
Sweeney, James D.: *See—*
Crish, Timothy J.; Sweeney, James D.; and Mortimer, J. Thomas, 4,608,985, Cl. 128-419.00R.
Swiss Aluminium Ltd.: *See—*
Rodrigues, Pedro; Bichsel, Heinz; and Wehner, Frank, 4,609,408, Cl. 148-2.000.
Switchcraft, Inc.: *See—*
Lavigne, Vernon W.; Rosborough, Keith A.; and Lau, Frederick L., 4,609,795, Cl. 200-61.190.
Switzer, Jay A., to Union Oil Company of California. Preparation of photovoltaic device by electrochemical deposition. 4,608,750, Cl. 29-572.000.
Syftestad, Glenn T.: *See—*
Caplan, Arnold; and Syftestad, Glenn T., 4,609,551, Cl. 424-95.000.
Syntex (U.S.A.) Inc.: *See—*
Verheyden, Julien P. H.; and Martin, John C., 4,609,661, Cl. 514-262.000.
Szelke, Michael; Jones, David M.; and Hallett, Allan, to Aktiebolaget Hassle. Renin inhibitors, treatments and dipeptide synthesis. 4,609,643, Cl. 514-16.000.
T. D. Williamson, Inc.: *See—*
Ralls, Gene R., 4,609,209, Cl. 285-24.000.
Tabata, Kuniaki; Machida, Tetsuo; Takeda, Haruo; Takada, Naoki; and Okada, Yasuyuki, to Hitachi, Ltd. Method of and apparatus for enlarging/reducing two-dimensional images. 4,610,026, Cl. 382-47.000.
Tachikawa Spring Co., Ltd.: *See—*
Nemoto, Akira, 4,608,744, Cl. 29-527.100.
Yoshizawa, Toshio, 4,609,226, Cl. 297-452.000.
Taguchi, Yoshinori: *See—*
Murakami, Azuma; Taguchi, Yoshinori; and Yamanami, Tsuguya, 4,609,776, Cl. 178-18.000.
Tahata, Michio, to Honda Giken Kogyo Kahushiki Kaisha. Variable venturi type carburetor. 4,609,505, Cl. 261-41.00R.
Tajima, Katsuichiro: *See—*
Shimada, Yukio; Kato, Shizuo; and Tajima, Katsuichiro, 4,608,914, Cl. 98-2.060.
Tajiri, Koji; and Arimatu, Toshiharu, to Teijin Limited. Apparatus for manufacturing a bulky textured yarn. 4,608,736, Cl. 28-220.000.
Takabayashi, Youjiro, to Nippon Gakki Co., Ltd. Tremolo apparatus for an electric guitar with tuning function. 4,608,905, Cl. 84-313.000.
Takabayashi, Youjiro, to Nippon Gakki Co., Ltd. Tremolo apparatus for an electric guitar. 4,608,906, Cl. 84-313.000.
Takada, Naoki: *See—*
Tabata, Kuniaki; Machida, Tetsuo; Takeda, Haruo; Takada, Naoki; and Okada, Yasuyuki, 4,610,026, Cl. 382-47.000.
Takagi, Seiichi; and Hyosu, Yoshihiko, to Canon Kabushiki Kaisha. Magnetic toner and process for producing the same. 4,609,607, Cl. 430-106.600.
Takahara, Kazuaki: *See—*
Aoyagi, Juuro; Takahara, Kazuaki; and Seita, Yukio, 4,609,464, Cl. 210-321.300.
Takahashi, Akira: *See—*
Komatsubara, Masahiro; Kamimura, Tetsuro; Inanaga, Takugi; and Takahashi, Akira, 4,609,164, Cl. 242-199.000.
Takahashi, Hideaki: *See—*
Kogure, Tsuneo; Tsuchiyama, Yuji; Amano, Tadashi; Takahashi, Hideaki; Sekita, Katsuji; and Akami, Ichio, 4,608,852, Cl. 72-389.000.
Takahashi, Koji: *See—*
Fushiki, Takeo; Takahashi, Koji; and Okazaki, Morio, 4,609,039, Cl. 165-174.000.
Takahashi, Shigeo, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Kaisha. Pressure modulator valve device. 4,609,013, Cl. 137-637.000.
Takahashi, Toshiaki, to Canon Kabushiki Kaisha. Photoelectric element characteristic measuring apparatus. 4,609,291, Cl. 356-418.000.
Takahashi, Yonosuke: *See—*
Sigyo, Masamiti; Wada, Minoru; and Takahashi, Yonosuke, 4,609,611, Cl. 430-270.000.
Takai, Hitoshi, to Ishino Seisakujo Co., Ltd. Circulative catering table. 4,609,092, Cl. 198-367.000.
Takaki, Hisashi; and Matsushita, Fumio, to Pioneer Electronic Corporation. PLL modulation circuit. 4,609,886, Cl. 332-19.000.
Takao, Yasuhide: *See—*
Kishi, Tomomi; Awano, Yoshiroh; and Takao, Yasuhide, 4,609,804, Cl. 219-74.000.
Takata, Satoshi; and Tani, Nobutaka, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Apparatus for purifying blood. 4,609,461, Cl. 210-195.200.
Takaya, Takao; Masugi, Takashi; and Kawabata, Kohji, to Fujisawa Pharmaceutical Co., Ltd. 7-[substituted imino-2-(2-aminothiazol-4-yl)-acetamido]-3(2,2-dihalovinyl or ethynyl)-3-cephem-4-carboxylic acid (syn isomers), having antimicrobial activities. 4,609,730, Cl. 514-202.000.
Takeda Chemical Industries, Ltd.: *See—*
Yoshimura, Yoshinobu; Nishida, Yoko; and Yashiki, Takatsuka, 4,609,650, Cl. 514-178.000.
Takeda, Haruo: *See—*
Tabata, Kuniaki; Machida, Tetsuo; Takeda, Haruo; Takada, Naoki; and Okada, Yasuyuki, 4,610,026, Cl. 382-47.000.
Takeda, Keiso: *See—*
Inoue, Tokuta; Oishi, Kiyohiko; Okamoto, Takamitsu; and Takeda, Keiso, 4,608,948, Cl. 123-52.00M.
Takehisa, Yoshitaka: *See—*
Ohishi, Yoshitaka; Nagahara, Michiko; Takehisa, Yoshitaka; Yajima, Motoyuki; Kurokawa, Shigeki; Kajikawa, Norio; and Itoh, Akira, 4,609,736, Cl. 548-183.000.
Takei, Haruo: *See—*
Sugimoto, Tadao; Yamada, Sumito; Ikeda, Tadashi; Takei, Haruo; and Okazaki, Masaki, 4,609,621, Cl. 430-567.000.
Takenawa, Seishi: *See—*
Itoh, Masumi; and Takenawa, Seishi, 4,609,490, Cl. 252-358.000.
Takenobu, Shinya, to Mitsubishi Denki Kabushiki Kaisha. Color cathode-ray tube with insulating rod support for electron gun. 4,609,848, Cl. 313-417.000.
Taketani, Toshinobu; Ota, Minoru; Kobayashi, Masafumi; and Kato, Kazuo, to Mazda Motor Corporation. Hanger conveyance in automobile assembly line. 4,609,093, Cl. 198-378.000.
Takeuchi, Hiroshi, to Kabushiki Kaisha Daikin Seisakusho. Dry clutch disc. 4,609,088, Cl. 192-106.100.
Takeuchi, Koichi: *See—*
Yamagiwa, Kazuo; Nishitani, Kiyoshi; Takeuchi, Koichi; and Sato, Seiji, 4,609,947, Cl. 358-310.000.
Takeuchi, Minami; and Otake, Shuichi. Power semiconductor device with O-ring seal. 4,609,937, Cl. 357-79.000.
Takigawa, Nobuhiro: *See—*
Kubo, Keishi; Takigawa, Nobuhiro; and Kawamura, Eiichi, 4,609,928, Cl. 346-208.000.
Tamura, Makoto: *See—*
Nogimori, Katsumi; Tamura, Makoto; Kurokawa, Shigeki; and Yajima, Motoyuki, 4,609,549, Cl. 424-92.000.
Tanaka, Hideki: *See—*
Morita, Shigeru; Tanaka, Hideki; and Umemura, Kyoichi, 4,608,952, Cl. 123-198.00F.
Tanaka, Hideo: *See—*
Torii, Sigeru; Tanaka, Hideo; Sasaoka, Michio; Uto, Seiryu; and Kameyama, Yutaka, 4,609,438, Cl. 204-72.000.
Tanaka, Ichiro: *See—*
Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, 4,609,000, Cl. 134-62.000.
Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, 4,609,001, Cl. 134-62.000.
Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, 4,609,002, Cl. 134-62.000.
Tanaka, Yasuhiko: *See—*
Nozu, Taketo; Kimura, Yoshiaki; and Tanaka, Yasuhiko, 4,609,925, Cl. 346-1.100.
Tanaka, Yoshie: *See—*
Ogawa, Yoshifumi; Nishiumi, Masaharu; Tanaka, Yoshie; Okudaira, Sadayuki; and Nishimatsu, Shigeru, 4,609,426, Cl. 156-626.000.
Tanaka, Yoshio; and Sugimoto, Yasuo, to Honda Giken Kogyo Kabushiki Kaisha. Portable engine-generator set. 4,608,946, Cl. 123-2.000.
Tandberg Data A/S: *See—*
Rudi, Guttorm, 4,609,959, Cl. 360-106.000.
Tangonan, Gregory L.: *See—*
Wong, Shi-Yin; and Tangonan, Gregory L., 4,609,252, Cl. 350-96.120.
Tangri, Kris: *See—*
Bassim, M. Nabil; and Tangri, Kris, 4,609,994, Cl. 364-551.000.
Tani, Nobutaka: *See—*
Takata, Satoshi; and Tani, Nobutaka, 4,609,461, Cl. 210-195.200.
Taniguchi, Akihiko, to Sharp Kabushiki Kaisha. Heat fixing device. 4,609,278, Cl. 355-3.0FU.
Taniguchi, Masato: *See—*
Ashizaki, Shigeya; Kimura, Masamichi; and Taniguchi, Masato, 4,609,847, Cl. 313-413.000.
Tannatta, Raymond A. Emergency breathing apparatus. 4,608,975, Cl. 128-202.130.
Tanoue, Tsuyoshi, to Toyota Jidosha Kabushiki Kaisha. Lower bearing fixing device for a steering main shaft of a steering system in automotive vehicles. 4,608,881, Cl. 74-492.000.
Tanuku, Yoshiteru: *See—*
Izumi, Jinko; Imai, Yoshitaka; Nakatani, Munetsugu; Tanuku, Yoshiteru; and Fukahori, Naoyuki, 4,609,540, Cl. 423-447.600.
Taralp, Guner, to Northern Telecom Limited. Delay equalizer. 4,609,887, Cl. 333-28.00R.
Tarr, Robert G. Racket handle assembly having vibration dampening characteristics. 4,609,198, Cl. 273-73.00J.
Tatsuji, Chuman: *See—*
Masataka, Mori; Tatsuji, Chuman; Kunio, Kato; and Mikio, Ono, 4,609,764, Cl. 568-384.000.
Tatum, Edward F.: *See—*
Shin, Kju H.; and Tatum, Edward F., 4,609,767, Cl. 568-722.000.
Taub, Alan I.: *See—*
Chang, Keh-Minn; Huang, Shyh-Chin; and Taub, Alan I., 4,609,528, Cl. 419-62.000.
Taube, Tom: *See—*
Hill, Derek; Lauterbach-Dammler, Inge; Taube, Tom; and Zollner, Dieter, 4,610,015, Cl. 373-93.000.
Taylor, Harold M.: *See—*
Hirsch, Kenneth S.; Jones, Charles D.; and Taylor, Harold M., 4,609,666, Cl. 514-359.000.
TDK Corporation: *See—*
Hosaka, Akihiko; Okuyama, Kiyotaka; and Kanazawa, Kiyosumi, 4,609,588, Cl. 428-329.000.

Teijin Limited: *See—*
Iohara, Kohichi; and Matsui, Michikage, 4,609,710, Cl. 525-176.000.
Tajiri, Koji; and Arimatu, Toshiharu, 4,608,736, Cl. 28-220.000.
Tejfalussy, Andras. Temperature distribution regulating sample holder-adapter for forming conditions for gradient heat treatment in heat treatment ovens or furnaces. 4,609,343, Cl. 432-36.000.
Tektronix, Inc.: *See—*
Hoffman, Gilbert A., 4,609,980, Cl. 363-20.000.
Teledyne Electro-Mechanisms: *See—*
Morris, Gilbert V., 4,608,941, Cl. 118-63.000.
Telefunken electronic GmbH: *See—*
Dermitzakis, Stephan; Suri, Jasbeer S.; Krumrein, Gerhard; and Mischel, Peter, 4,609,880, Cl. 330-308.000.
Teltronics, Inc.: *See—*
Hills, Gary G., 4,609,579, Cl. 428-195.000.
Tencor Instruments: *See—*
Wheeler, William R.; and Lee, Steven R., 4,609,037, Cl. 165-61.000.
Tenhover, Michael A.; Henderson, Richard S.; Harris, Jonathan H.; Grasselli, Robert K.; and Ward, Michael D., to Standard Oil Company, The. Electrolysis of halide-containing solutions with amorphous metal alloys. 4,609,442, Cl. 204-95.000.
Terada, Motoharu; and Murakami, Kazumasa, to Matsushita Electric Works, Ltd. Signal transmission system featuring bidirectional transmission of different signal types over a common transmission line connecting a central unit and a plurality of terminal units. 4,610,012, Cl. 370-110.400.
Terrier, Jacques: *See—*
Perrier de la Bathie, Rene; and Terrier, Jacques, 4,610,017, Cl. 373-156.000.
Terumo Kabushiki Kaisha: *See—*
Aoyagi, Juuro; Takahara, Kazuaki; and Seita, Yukio, 4,609,464, Cl. 210-321.300.
Testi, Giancarlo, to Italfarad S.p.A. Metallized plastic film electric capacitor. 4,609,973, Cl. 361-433.000.
Tetra Dev-Co: *See—*
Bordini, Giorgio, 4,608,810, Cl. 53-551.000.
Texaco Inc.: *See—*
Cook, Ronald L., 4,609,439, Cl. 204-74.000.
Cox, Percy T.; Meador, Richard A.; Riedesel, Roland G., Jr.; and Savage, Kerry D., 4,609,873, Cl. 324-338.000.
Cuscurida, Michael; and Waddill, Harold G., 4,609,685, Cl. 521-167.000.
Grigsby, Robert A., Jr.; and Dominguez, Richard J. G., 4,609,683, Cl. 521-159.000.
Grigsby, Robert A., Jr.; and Dominguez, Richard J. G., 4,609,684, Cl. 521-163.000.
Knifton, John F.; Lin, Jiang-Jen; and Grice, Neal J., 4,609,768, Cl. 568-866.000.
Robbins, Gregory K., 4,609,448, Cl. 204-197.000.
Sammells, Anthony F.; and Pa Ang, Peter G., 4,609,451, Cl. 204-265.000.
Sung, Rodney L.; and Crawford, Wheeler C., 4,609,377, Cl. 44-56.000.
Watts, Lewis W., Jr.; and Vanderpool, Steven H., 4,609,761, Cl. 564-479.000.
Texas Instruments Incorporated: *See—*
Bimer, Thomas C.; Creps, Malvern L.; and Millis, Edwin G., 4,609,103, Cl. 206-328.000.
McElroy, David J., 4,608,751, Cl. 29-576.00B.
Th. Goldschmidt AG: *See—*
Giesing, Herbert; Koerner, Gotz; Kropac, Vaclay; Patzke, Hans-Jurgen; Quilitsch, Herbert; Rau, Harald; Schamberg, Eckehard; Spieker, Fritz; and Weitemeyer, Christian, 4,609,752, Cl. 556-457.000.
Kollmeier, Hans-Joachim; Langenhagen, Rolf-Dieter; and Hoffmann, Klaus, 4,609,750, Cl. 556-419.000.
Thaler, Michael R., to Image Communications Inc. Facsimile apparatus and duplicator. 4,609,946, Cl. 358-286.000.
Thayer, LeRoy E.: *See—*
Keryk, John R.; Lo, Peter Y. K.; and Thayer, LeRoy E., 4,609,574, Cl. 427-407.100.
The, Paul J.; and Felix, William V., to Aluminum Company of America. Lime cleaning process to remove manganese oxide. 4,609,534, Cl. 423-49.000.
Thermalloy Incorporated: *See—*
Moore, Marvin F., 4,609,040, Cl. 165-80.300.
Thermosen, Incorporated: *See—*
DeKoster, Heinz; Edelman, Oscar; and Magida, Nathan H., 4,609,897, Cl. 335-133.000.
Theurer, Josef; and Oellerer, Friedrich, to Franz Plasser Bahnbaumaschinen-Industriegesselschaft m.b.H. Track-bound carriage for an assembled track section. 4,608,928, Cl. 104-3.000.
Thies, Peter: *See—*
Fudickar, Harald; and Thies, Peter, 4,609,100, Cl. 198-854.000.
Thieux, Jean, to Compagnie Clayton. Machine for shredding waste. 4,609,157, Cl. 241-243.000.
Thiokol Corporation: *See—*
Stevens, George L., 4,608,926, Cl. 102-275.400.
Thoenen, Alan, to Spuhl AG. Mattress spring core with open ended coils. 4,609,186, Cl. 267-91.000.
Thomas, Frank O. Travel pack. 4,609,084, Cl. 190-110.000.
Thomas, Griffith. Extracting soluble phosphates from naturally occurring iron and aluminium phosphates using solutions of alkali metal carbonates and hydroxides. 4,609,535, Cl. 423-167.000.
Thompson, Mark E.: *See—*
Pasteris, Robert J.; and Thompson, Mark E., 4,609,395, Cl. 71-90.000.
Thomson Components-Mostek Corporation: *See—*
Dozier, Harold W., 4,609,985, Cl. 364-200.000.
Guterman, Daniel C., 4,609,833, Cl. 307-297.000.
Lee, Robert D., 4,610,000, Cl. 365-189.000.
Thomson CSF: *See—*
Bedos, Thierry; Clerissi, Roland; Vallee, Jacques; and Nguyen Xuan, Kiet, 4,609,916, Cl. 340-703.000.
Berger, Jean L.; and Descure, Pierre, 4,609,823, Cl. 250-370.000.
Berger, Jean L.; and Brissot, Louis, 4,609,825, Cl. 250-578.000.
Bouard, Philippe, 4,609,414, Cl. 148-179.000.
Munier, Bernard; and Arques, Marc, 4,609,824, Cl. 250-578.000.
Munier, Bernard, 4,609,943, Cl. 358-213.000.
Thomson-LGT: *See—*
Dominguez, Mariano; and Artaud, Daniel, 4,610,030, Cl. 455-113.000.
Thorsett, Eugene D.; Williamson, Joanne M.; and Wilson, Kenneth E., to Merck & Co., Inc. Difficol, intermediate in antibiotic preparation. 4,609,742, Cl. 549-271.000.
Tibbals, Edward C., Jr. Circular weft knitting machines. 4,608,839, Cl. 66-13.000.
Tieber, James B. Seed dispensing device. 4,609,131, Cl. 222-278.000.
Tietz, Werner, to Zeiss Ikon AG. Lock and key system. 4,608,842, Cl. 70-358.000.
Timberline Supply, Ltd.: *See—*
Walla, Gregg W., 4,609,233, Cl. 312-219.000.
Timpl, Rupert, to Max-Planck-Gesellschaft Zur Foederung der Wissenschaften E.V. Process for the immunological determination of proteins in body fluid which display a non-parallel inhibition curve to a reference inhibitor. 4,609,629, Cl. 436-512.000.
Tipton, Lynn: *See—*
Yost, Wayne R.; and Tipton, Lynn, 4,608,793, Cl. 52-235.000.
Tisler, Miha: *See—*
Jurgec, Milan; Rucman, Rudolf; Stanovnik, Branko; and Tisler, Miha, 4,609,731, Cl. 544-346.000.
Tisone, Robert W., to Environmental Elements Corp. Stepped plenum system. 4,609,009, Cl. 137-561.00A.
Tissari, Martti, to Valmet Oy. Process and equipment in the forming of paper web. 4,609,435, Cl. 162-203.000.
Tobita, Hideaki; and Naruse, Kazuo, to Toyota Jidosha Kabushiki Kaisha. Weld nut welding apparatus. 4,609,805, Cl. 219-93.000.
Toborowsky, Michael S.: *See—*
Anspach, William E., Jr.; and Toborowsky, Michael S., 4,608,965, Cl. 128-4.000.
Tokico Ltd.: *See—*
Hirose, Yoshiyuki; and Kiryu, Kyuji, 4,609,856, Cl. 318-640.000.
Tokura, Norihito: *See—*
Sakakibara, Yasuyuki; and Tokura, Norihito, 4,608,958, Cl. 123-605.000.
Tokuyama, Takashi: *See—*
Masao, Tamura; Kozuka, Hirotsugu; Wada, Yasuo; Ohkura, Makoto; Hiroshi, Tamura; Tokuyama, Takashi; Okabe, Takahiro; Minato, Osamu; and Ohba, Shinya, 4,609,407, Cl. 148-1.500.
Tokyo Kogaku Kikai Kabushiki Kaisha: *See—*
Nobuaki, Kitajima; Shinichi, Nishimura; and Susumu, Takahashi, 4,609,814, Cl. 250-201.000.
Suzuki, Toru, 4,609,851, Cl. 315-241.00P.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Amano, Katsumi, 4,609,908, Cl. 340-365.00S.
Chiba, Shu; and Sawazaki, Norikazu, 4,609,950, Cl. 360-29.000.
Fujioka, Yoshiharu, 4,609,960, Cl. 360-108.000.
Hasebe, Kouki, 4,609,995, Cl. 364-900.000.
Koike, Hideharu, 4,609,931, Cl. 357-23.130.
Naniwa, Isao; Nishida, Kazuo; and Yoshihara, Kiyoshi, 4,609,234, Cl. 312-296.000.
Noguchi, Hideo; and Iwamoto, Tugunari, 4,608,748, Cl. 29-571.000.
Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, 4,609,000, Cl. 134-62.000.
Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, 4,609,001, Cl. 134-62.000.
Noh, Akihiko; Saijo, Yoshiaki; Sato, Shinichi; and Tanaka, Ichiro, 4,609,002, Cl. 134-62.000.
Suzuki, Susumu; and Kudo, Yukinori, 4,609,938, Cl. 358-26.000.
Tolochko, Alexei I.: *See—*
Shostak, Valentin M.; Tolochko, Alexei I.; Volkov, Vasily P.; Maradudin, Georgy I.; Schekin, Nikolai G.; Popov, Mikhail I.; Shepelev, Dmitry N.; Matveev, Anatoly I.; Butnyakov, Alexandr I.; and Rzhavichev, Anatoly P., 4,610,016, Cl. 373-137.000.
Tolpin, Thomas W.; and Kretchmer, Richard A., to Standard Oil Company (Indiana). Process for simultaneously removing nitrogen oxides, sulfur oxides, and particulates. 4,609,537, Cl. 423-244.000.
Tonchen, Stephen. Preformed band for use in coupling tubular members. 4,609,213, Cl. 285-419.000.
Topp, Burkhard. Method of and device for the mechanical division of units of cheese. 4,608,896, Cl. 83-431.000.
Toray Industries, Inc.: *See—*
Fujita, Akiharu; Sato, Minako; and Murakami, Masashige, 4,609,680, Cl. 521-48.000.
Toray Silicone Company, Ltd.: *See—*
Suzuki, Toshio; and Yamakawa, Kimio, 4,609,590, Cl. 428-378.000.
Torii, Michihiro; Moritomo, Takao; Endo, Kaoru; and Ito, Norifumi, to Fuji Electrochemical Co., Ltd. Magnetic drum cassette with mag-

netic drum having voice information recorded thereon. 4,609,956, Cl. 360-100.000.
Torii, Sigeru; Tanaka, Hideo; Sasaoka, Michio; Uto, Seiryu; and Kameyama, Yutaka, to Otsuka Kagaku Kabushiki Kaisha. Process for preparing thiosulfonate derivatives. 4,609,438, Cl. 204-72.000.
Toro Company, The: *See—*
Walto, Joseph J., 4,609,146, Cl. 239-123.000.
Torokvei, Thomas E.; and Lepp, Wayne, to Scepter Manufacturing Company Limited. Restrainer device for couplings in pipelines. 4,609,210, Cl. 285-114.000.
Toshiba Ceramics Co., Ltd.: *See—*
Yamashita, Hajime; Hirao, Toshiyuki; and Yamazaki, Masatoshi, 4,609,347, Cl. 432-234.000.
Toshiba Tungaloy Co., Ltd.: *See—*
Fukuhara, Mikio; and Maekawa, Yoshitaka, 4,609,633, Cl. 501-97.000.
Toth, Ottilia F.; and Kocsis, Alexandre. High efficiency stable CdS-Cu_2S solar cells manufacturing process using thick film methodology. 4,609,567, Cl. 427-74.000.
Townsend, Donald M.; and Jacklich, John R., to Simpson Dura Vent Company, Inc. Thermally balanced air flow chimney. 4,608,963, Cl. 126-307.00R.
Toyo Jozo Company, Ltd.: *See—*
Morishita, Masataka; Aikawa, Renji; and Yamamoto, Yoshiaki, 4,609,640, Cl. 514-12.000.
Toyo Netsukogyo Kaisha Ltd.: *See—*
Fushiki, Takeo; Takahashi, Koji; and Okazaki, Morio, 4,609,039, Cl. 165-174.000.
Toyokura, Nobuo; Ohnishi, Toyokazu; and Yokoyama, Naoki, to Fujitsu Limited. Thin film resistor for an integrated circuit semiconductor device. 4,609,903, Cl. 338-22.0SD.
Toyota Jidosha Kabushiki Kaisha: *See—*
Hasegawa, Mitsuru; and Fukuda, Tamotsu, 4,608,827, Cl. 60-605.000.
Inoue, Tokuta; Oishi, Kiyohiko; Okamoto, Takamitsu; and Takeda, Keiso, 4,608,948, Cl. 123-52.00M.
Katoh, Kenji; Yamada, Toshio; Shindo, Kenichiro; Matsushita, Souichi; and Inoue, Tokuta, 4,608,956, Cl. 123-417.000.
Kishi, Tomomi; Awano, Yoshiroh; and Takao, Yasuhide, 4,609,804, Cl. 219-74.000.
Kozawa, Kunio; Ishikawa, Soichi; and Yoshida, Mamoru, 4,609,939, Cl. 358-101.000.
Okamura, Itsuji; Matushita, Hiroaki; and Murata, Kiyoshi, 4,609,458, Cl. 210-85.000.
Shiraishi, Daiichi; Iwasaki, Eiji; and Fukumoto, Ryoichi, 4,608,778, Cl. 49-352.000.
Takahashi, Shigeo, 4,609,013, Cl. 137-637.000.
Tanoue, Tsuyoshi, 4,608,881, Cl. 74-492.000.
Tobita, Hideaki; and Naruse, Kazuo, 4,609,805, Cl. 219-93.000.
Traunecker, Werner: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; Muacevic, Gojko; and Traunecker, Werner, 4,609,672, Cl. 514-522.000.
Trescher, Viktor: *See—*
Dorlars, Alfons; Blank, Heinz U.; Nordt, Herbert, deceased; and Trescher, Viktor, 4,609,756, Cl. 562-495.000.
Trico Products Corporation: *See—*
Sumins, Edmund J.; and Baker, Roger W., 4,608,728, Cl. 15-250.320.
Trimble, Melvin E.: *See—*
Miller, G. Kirby; Trimble, Melvin E.; and Magee, Mark R., 4,609,909, Cl. 340-541.000.
Tritton, Gary E.: *See—*
Chevillard, Paul F.; Tritton, Victor R.; and Tritton, Gary E., 4,609,218, Cl. 292-320.000.
Tritton, Victor R.: *See—*
Chevillard, Paul F.; Tritton, Victor R.; and Tritton, Gary E., 4,609,218, Cl. 292-320.000.
Triumph Adler AG: *See—*
Hubner, Manfred; and Rettke, Wilfried, 4,609,297, Cl. 400-187.000.
Troxler, Franz: *See—*
Stadler, Paul; and Troxler, Franz, 4,609,657, Cl. 514-250.000.
TRW Inc.: *See—*
Vishnevsky, Constantine; and Kolakowski, Thomas A., 4,609,029, Cl. 164-122.000.
TRW Probe Electronics Co. Ltd.: *See—*
Harbour, John, 4,609,060, Cl. 177-136.000.
Tsubouchi, Toshiyuki; and Hata, Hitoshi, to Idemitsu Kosan Company Limited. Process for improving traction coefficient of traction drive fluid at high temperatures. 4,609,481, Cl. 252-73.000.
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Kogure, Tsuneo; Tsuchiyama, Yuji; Amano, Tadashi; Takahashi, Hideaki; Sekita, Katsuji; and Akami, Ichio, 4,608,852, Cl. 72-389.000.
Tsudakoma Kogyo Kabushiki Kaisha: *See—*
Sugita, Katsuhiko; and Sakano, Toshiyuki, 4,609,858, Cl. 318-778.000.
Tsuji, Masahiro: *See—*
Kamio, Morinori; Tsuji, Masahiro; Kawauchi, Susumu; Ono, Jun; Isayama, Hideki; Nishimoto, Akihiko; Miyawaki, Yoshiharu; Nozoe, Osamu; and Iwase, Koji, 4,609,412, Cl. 148-12.00C.
Tsunemine, Toyohiko: *See—*
Miyai, Kiyoshi; Uotani, Shuhei; and Tsunemine, Toyohiko, 4,609,281, Cl. 355-3.00R.
Tsuruga, Yuji: *See—*
Asai, Kachio; and Tsuruga, Yuji, 4,609,863, Cl. 323-223.000.
Tucholski, Gary R.; and Chaney, Earl J., to Union Carbide Corporation. Electrochemical cell. 4,609,598, Cl. 429-174.000.
Turner, Larry G.; Stanish, Leo S.; Kuttruff, Manfred; Budzinski, Walter J.; and MacDonald, Robert, to Brasscraft Manufacturing Company. Valve. 4,609,177, Cl. 251-175.000.
Twellmann, Guenter, to Ninkaplast GmbH. Drawer for cupboards. 4,609,236, Cl. 312-330.00R.
Twigger, Ronald T.; and Dodkin, Raymond, to Wondertex Limited. Cutting guides for coving. 4,608,899, Cl. 83-745.000.
Tytke, Edward W., to Union Camp Corporation. Primer system for grease repellant papers. 4,609,571, Cl. 427-208.200.
Uchiyama, Takashi: *See—*
Hata, Go; Etoh, Takeaki; Shirakawa, Toshifumi; Matsuura, Yuji; and Uchiyama, Takashi, 4,609,492, Cl. 252-522.00R.
Udagawa, Yoshio. Track toy. 4,609,363, Cl. 446-444.000.
Uebelacker, Walter U.: *See—*
McIlvaine, George V.; Baker, Thompson A.; and Uebelacker, Walter U., 4,609,090, Cl. 193-47.000.
Uehara, Tadayoshi, to Aida Engineering, Ltd. Flow control valve. 4,609,011, Cl. 137-624.150.
Uggeri, Fulvio: *See—*
Giordano, Claudio; Belli, Aldo; Uggeri, Fulvio; and Villa, Giovanni, 4,609,766, Cl. 568-592.000.
Uhl, John B., to Sterling Faucet Company. Mixing valve for connection to hot and cold water supply lines for feeding a variably proportioned mixture of hot and cold water to a shower head or the like. 4,609,007, Cl. 137-270.000.
UIP Engineered Products Corporation: *See—*
Breckenfelder, Ernst G., 4,609,583, Cl. 428-140.000.
Ullman, John E., to Mead Corporation, The. Multi-unit package. 4,609,101, Cl. 206-45.330.
Ulmer, Harrold, to Whittar Industries, Ltd. Shopping cart corral kit and method of assembling a corral from the component parts of the kit. 4,609,183, Cl. 256-1.000.
Ultima Electronics, Ltd.: *See—*
Fathi, Saul S., 4,609,914, Cl. 340-660.000.
Umemura, Kyoichi: *See—*
Morita, Shigeru; Tanaka, Hideki; and Umemura, Kyoichi, 4,608,952, Cl. 123-198.00F.
Unimation, Inc.: *See—*
Csakvary, Tibor, 4,608,746, Cl. 29-564.400.
Union Camp Corporation: *See—*
Tytke, Edward W., 4,609,571, Cl. 427-208.200.
Union Carbide Corporation: *See—*
Harris, James E.; and Robeson, Lloyd M., 4,609,714, Cl. 525-471.000.
Savich, Peter P.; and Ziegelhoffer, Paul, 4,609,367, Cl. 493-194.000.
Tucholski, Gary R.; and Chaney, Earl J., 4,609,598, Cl. 429-174.000.
Union Oil Company of California: *See—*
Switzer, Jay A., 4,608,750, Cl. 29-572.000.
Wilkes, Elizabeth, 4,609,696, Cl. 524-59.000.
United Chinese Plastics Products Co. Ltd.: *See—*
Liu, Hon, 4,609,576, Cl. 428-18.000.
United States Gypsum Company: *See—*
Green, William J.; and Semmerling, Ralph P., 4,608,801, Cl. 52-664.000.
United States of America
Agriculture: *See—*
Hunt, John F., 4,608,765, Cl. 34-12.000.
Air Force: *See—*
Carr, Paul H.; and Silva, Jose H., 4,609,843, Cl. 310-313.00A.
Richards, Ernie; and Bluzer, Nathan, 4,610,019, Cl. 377-58.000.
Schweickert, Thomas F.; and Orton, George F., 4,609,169, Cl. 244-169.000.
Army: *See—*
Dean, Edward H.; and Doxey, Burnley R., 4,609,167, Cl. 244-137.00A.
Dean, Edward H.; Doxey, Burnley R.; Diebler, Daniel T.; and Swats, Charles F., 4,609,168, Cl. 244-137.00A.
Kronenberg, Stanley, 4,609,520, Cl. 376-153.000.
Messier, Donald R.; DeGuire, Eileen J.; and Katz, R. Nathan, 4,609,631, Cl. 501-35.000.
Pistor, Helmut H., 4,609,240, Cl. 339-17.0LM.
Energy: *See—*
Hitchcock, David C.; Mailhe, Catherine C.; and De Jonghe, Lutgard C., 4,609,596, Cl. 429-104.000.
Nickols, Richard C., 4,609,595, Cl. 429-35.000.
Health and Human Services: *See—*
Minton, Allen P.; Attri, Arun K.; Sullivan, James V.; and Fitze, Paul, 4,609,991, Cl. 364-499.000.
National Aeronautics and Space Administration: *See—*
Zavesky, Ralph J.; Sovey, James S.; Mirtich, Michael J.; Marinos, Charalampus; and Penko, Paul F., 4,608,821, Cl. 60-203.100.
Navy: *See—*
Bobb, Lloyd C., 4,609,871, Cl. 324-244.000.
Corzine, Robert G.; and Mosko, Joseph A., 4,609,888, Cl. 333-34.000.
DeMarco, Michael, 4,609,362, Cl. 440-75.000.
Self, Henry L.; and Pickett, Teddy L., 4,609,215, Cl. 292-144.000.
U.S. Philips Corporation: *See—*
Boele, Floris, 4,609,156, Cl. 241-199.120.
Joormann, Hendrik J. M.; and Van Gorp, Alois J. M., 4,609,582, Cl. 428-138.000.

Kruishoop, Johan C. W.; Legierse, Petrus E. J.; Van Ruler, Johannes; and Broer, Dirk J., 4,609,437, Cl. 204-28.000.
Leenhouts, Frans; and de Zwart, Maarten, 4,609,255, Cl. 350-341.000.
Mateika, Dieter W.; and Laurien, Rolf, 4,609,425, Cl. 156-617.0SP.
Segarra, Gerard, 4,609,920, Cl. 340-825.510.
Severin, Petrus J. W., 4,609,816, Cl. 250-227.000.

United States Steel Corporation: *See—*
Hu, Hsun, 4,609,410, Cl. 148-142.000.

United Technologies Corporation: *See—*
Pane, Francis C., Jr.; Matthews, John A.; Wright, Richard R.; Sarnik, John M.; and Frasca, Thomas, 4,609,150, Cl. 239-397.500.
Sharon, Harold M., 4,608,756, Cl. 30-287.000.
Shuskus, Alexander J.; and Cowher, Melvyn E., 4,609,424, Cl. 156-613.000.

United Utensils Corporation: *See—*
Lauer, Leonard; and Spiegel, Susan, 4,609,120, Cl. 220-69.000.

University of California, The Regents of the: *See—*
Muller, Richard S.; and Polla, Dennis L., 4,608,865, Cl. 73-204.000.

University of Georgia, The: *See—*
King, Robert B.; and Borodinsky, Lester, 4,609,716, Cl. 526-310.000.

University of Manitoba, The: *See—*
Bassim, M. Nabil; and Tangri, Kris, 4,609,994, Cl. 364-551.000.

University of Maryland, The: *See—*
Kohn, Leonard D.; Valente, William A.; Grollman-Wolff, Evelyn F.; Aloj, Salvatore M.; and Vitti, Paolo, 4,609,622, Cl. 435-29.000.

University of Pittsburgh: *See—*
Cohen, Theodore; and Bhupathy, Mahadevan, 4,609,743, Cl. 549-397.000.

University of Western Ontario, Health Sciences Centre, The: *See—*
Fitz-James, Philip C., 4,609,550, Cl. 424-93.000.

UOP Inc.: *See—*
Cramm, Joan A., 4,609,468, Cl. 210-490.000.
Kilroy, James W., 4,609,457, Cl. 208-311.000.

Uotani, Shuhei: *See—*
Miyai, Kiyoshi; Uotani, Shuhei; and Tsunemine, Toyohiko, 4,609,281, Cl. 355-3.00R.

Upchurch, James M., to Schlumberger Technology Corporation. Tubing isolation disc valve. 4,609,005, Cl. 137-68.100.

Upjohn Company, The: *See—*
Franz, Robert M., 4,609,675, Cl. 514-568.000.
Gammill, Ronald B., 4,609,739, Cl. 549-57.000.

Urano, Chiaki: *See—*
Miki, Masaharu; and Urano, Chiaki, 4,609,332, Cl. 417-352.000.

Urata, Yoshito: *See—*
Yokoyama, Yoshihiro; Urata, Yoshito; Watanabe, Kazuo; and Ito, Kiyoteru, 4,609,277, Cl. 355-3.00R.

Ushiro, Kenzo: *See—*
Ishida, Mikio; Ishimori, Shoso; Nakamura, Hagime; and Ushiro, Kenzo, 4,608,879, Cl. 74-474.000.

USM Corporation: *See—*
Giebel, Gerhard, 4,608,723, Cl. 12-10.100.

Ustin, George; and Soltis, Andrew P., to North American Philips Corporation. Dead-front terminal block with movable covers. 4,609,246, Cl. 339-59.00M.

Utasi, Joseph G., to Dresser Industries, Inc. Video borehole depth measuring system. 4,610,005, Cl. 367-33.000.

Uthoff, Loren H., Jr., to Eaton Corporation. Supercharger with reduced noise and improved efficiency. 4,609,335, Cl. 418-201.000.

Uto, Seiryu: *See—*
Torii, Sigeru; Tanaka, Hideo; Sasaoka, Michio; Uto, Seiryu; and Kameyama, Yutaka, 4,609,438, Cl. 204-72.000.

Uzzo, Anthony P., to Eaton Corporation. Tire condition monitoring system. 4,609,905, Cl. 340-58.000.

Vagarali, Suresh S.: *See—*
Narayanan, Kesh S.; and Vagarali, Suresh S., 4,609,381, Cl. 51-298.000.

Vahlensieck, Hans-Joachim: *See—*
Kotzsch, Hans-Joachim; and Vahlensieck, Hans-Joachim, 4,609,749, Cl. 556-411.000.

Vaho, Matti: *See—*
Huhtala, Esko; Laaksonen, Markku; Vaho, Matti; Karttunen, Johannes; and Eklund, Gosta, 4,610,029, Cl. 383-10.000.

Vaisala Oy: *See—*
Kuisma, Heikki, 4,609,966, Cl. 361-283.000.

Valdshtein, George: *See—*
Masel, Ruben; and Valdshtein, George, 4,609,333, Cl. 417-393.000.

Valente, William A.: *See—*
Kohn, Leonard D.; Valente, William A.; Grollman-Wolff, Evelyn F.; Aloj, Salvatore M.; and Vitti, Paolo, 4,609,622, Cl. 435-29.000.

VALEO: *See—*
Mallet, Bernard, 4,608,741, Cl. 29-450.000.
Renaud, Pierre, 4,609,085, Cl. 192-70.230.

Valev, Atanas A.: *See—*
Hristozov, Vladislav N.; Ribarov, Hristo M.; Marchev, Zdravko B.; Markov, Spas N.; and Valev, Atanas A., 4,609,108, Cl. 209-581.000.

Valla, Jean: *See—*
Abbes, Claude; Rouaud, Christian; Valla, Jean; de Villepoix, Raymond; Demay, Robert; and Forges, Robert, 4,609,211, Cl. 285-325.000.

Vallee, Jacques: *See—*
Bedos, Thierry; Clerissi, Roland; Vallee, Jacques; and Nguyen Xuan, Kiet, 4,609,916, Cl. 340-703.000.

Vallomy, John A., to Intersteel Technology, Inc. Method and apparatus for preheating charge materials for continuous steelmaking. 4,609,400, Cl. 75-46.000.

Valmet Oy: *See—*
Tissari, Martti, 4,609,435, Cl. 162-203.000.

Valmont Industries, Inc.: *See—*
Chapman, John A.; Johnson, Thomas M.; and Newbold, Donald L., 4,609,147, Cl. 239-183.000.

Van Benschoten, Peter J.: *See—*
Podvin, T. Charles; and Van Benschoten, Peter J., 4,609,264, Cl. 350-529.000.

van Bokhorst, Hendrik: *See—*
Claessen, Albertus M. G.; and van Bokhorst, Hendrik, 4,610,010, Cl. 370-32.000.

van der Lely, Cornelis. Device for spreading granular and/or powdery material. 4,609,153, Cl. 239-665.000.

Vandermeerssche, Gaston A. Test holder for flat specimens. 4,608,854, Cl. 73-7.000.

Vanderpool, Steven H.: *See—*
Watts, Lewis W., Jr.; and Vanderpool, Steven H., 4,609,761, Cl. 564-479.000.

Vandlen, Richard L.: *See—*
Brady, Stephen F.; Napier, Mary A.; Nutt, Ruth F.; and Vandlen, Richard L., 4,609,725, Cl. 530-324.000.

Van Gorp, Alois J. M.: *See—*
Joormann, Hendrik J. M.; and Van Gorp, Alois J. M., 4,609,582, Cl. 428-138.000.

Van Handel, Gerald J.; Petit, John L.; and Wnek, Patrick H., to James River - Dixie Northern Inc. Rigid paperboard container and method and apparatus for producing same. 4,609,140, Cl. 229-2.50R.

Van Noy, William J. Spray channeling door seal. 4,608,780, Cl. 49-400.000.

VanRens, Russell J., to Outboard Marine Corporation. Evaporative pattern assembly for use in sand casting. 4,609,028, Cl. 164-34.000.

Van Ruler, Johannes: *See—*
Kruishoop, Johan C. W.; Legierse, Petrus E. J.; Van Ruler, Johannes; and Broer, Dirk J., 4,609,437, Cl. 204-28.000.

Van Ryzin, Joseph C.: *See—*
Bonaventura, Joseph; Bonaventura, Celia; Van Ryzin, Joseph C.; and Zenner, Bruce D., 4,609,383, Cl. 55-16.000.

Varner, Robert F. Bullet seating gauge and method for determining case base end to bullet tip distance. 4,608,762, Cl. 33-506.000.

Vasan, Saraswathi: *See—*
Keyes, Melvin H.; and Vasan, Saraswathi, 4,609,625, Cl. 435-176.000.

Vellinga, Sjoerd H. J., to Paques B.V. Anaerobic purification equipment for waste water. 4,609,460, Cl. 210-188.000.

Ventura, Luciano, to Finike Italiana Marposs S.p.A. Drawer for electrical cabinets. 4,609,235, Cl. 312-330.00R.

Verbatim Corporation: *See—*
Conner, Alfred W.; and Anderson, J. Reid, 4,609,963, Cl. 360-133.000.

Verheyden, Julien P. H.; and Martin, John C., to Syntex (U.S.A.) Inc. Substituted 9-(1-O- or 3-O-monosubstituted or 1,3-di-O-substituted propoxymethyl)purines as antiviral agents. 4,609,661, Cl. 514-262.000.

Verhoff, Francis H.: *See—*
Chung, Koo-Heung; Davis, Gary L.; and Verhoff, Francis H., 4,609,470, Cl. 210-725.000.

Verkouw, Hendrik T.: *See—*
Reisberg, Joseph; Verkouw, Hendrik T.; and Bolsman, Theodorus A. B. M., 4,609,474, Cl. 252-8.55D.

Vermeulen-Hollandia Octrooien II B.V.: *See—*
Boots, Robert T., 4,609,222, Cl. 296-218.000.

Vernay Laboratories, Inc.: *See—*
Jurjevic, Richard A.; and Schmidt, William J., 4,609,014, Cl. 138-45.000.

Vernon, George M.: *See—*
Curro, John J.; Baird, James C.; Gerth, Donald L.; Vernon, George M.; and Linman, E. Kelly, 4,609,518, Cl. 264-504.000.

Verreries de Graville: *See—*
Boutier, Pierre G., 4,609,393, Cl. 65-229.000.

Versch, Josef: *See—*
Hosang, Armin; and Versch, Josef, 4,609,212, Cl. 285-334.000.

Victor Company of Japan, Limited: *See—*
Shimizu, Kyoichi, 4,609,993, Cl. 364-522.000.

Villa, Giovanni: *See—*
Giordano, Claudio; Belli, Aldo; Uggeri, Fulvio; and Villa, Giovanni, 4,609,766, Cl. 568-592.000.

Vishnevsky, Constantine; and Kolakowski, Thomas A., to TRW Inc. Method of reducing casting time. 4,609,029, Cl. 164-122.000.

Viskase Corporation: *See—*
Kupcikevicius, Vytautas; and Raudys, Vytas A., 4,608,730, Cl. 17-41.000.
Nicholson, Myron D., 4,609,559, Cl. 426-650.000.

Vitti, Paolo: *See—*
Kohn, Leonard D.; Valente, William A.; Grollman-Wolff, Evelyn F.; Aloj, Salvatore M.; and Vitti, Paolo, 4,609,622, Cl. 435-29.000.

VLSI Technology, Inc.: *See—*
Huang, Eddy C., 4,609,838, Cl. 307-465.000.

Vodin, George M. Golf practice device. 4,609,197, Cl. 273-184.00B.

Voelk, Karl-Hermann; and Wehrstein, Karl-Heinz, to Dr. Johannes Heidenhain GmbH. Error correction system for measuring instrument. 4,608,758, Cl. 33-125.00R.

Vogel, Gunter: *See—*
Burkhardt, Rudolf; Hass, Hansjurgen; Hanisch, Horst; and Vogel, Gunter, 4,609,487, Cl. 252-315.500.

Vogel, Manfred, to Luk Lamellen und Kupplungsbau GmbH. Friction clutch. 4,609,086, Cl. 192-70.270.

Vogel, Walter: *See—*
Bayer, Oswald; Grehn, Martin; Hey, Edwin; Lorosch, Hans-Karl; and Vogel, Walter, 4,609,293, Cl. 384-469.000.

Vogt, James L.: *See—*
Heerdink, Robert J.; and Vogt, James L., 4,609,063, Cl. 180-69.230.

Voigt, Reiner: *See—*
Schwabe, Peter; and Voigt, Reiner, 4,609,687, Cl. 523-109.000.

Volk, Michael J. Saw guide and miter apparatus. 4,608,898, Cl. 83-745.000.

Volkov, Vasily P.: *See—*
Shostak, Valentin M.; Tolochko, Alexei I.; Volkov, Vasily P.; Maradudin, Georgy I.; Schekin, Nikolai G.; Popov, Mikhail I.; Shepelev, Dmitry N.; Matveev, Anatoly I.; Butnyakov, Alexandr I.; and Rzhavichev, Anatoly P., 4,610,016, Cl. 373-137.000.

Vora, Madhu: *See—*
Koh, Yun Bai; Chien, Frank; and Vora, Madhu, 4,609,568, Cl. 427-85.000.

Vorwerk, Frederick E.: *See—*
Ruhmann, Douglas C.; Britton, Ralph A.; Mundloch, James D.; and Vorwerk, Frederick E., 4,608,931, Cl. 105-248.000.

Vsesojuzny Nauchno-Issledovatelsky I Proektny Institut Po Ochistke Tekhnologicheskikh Gazov, Stochnykh Vod I Ispolzovaniju Vtorichnykh Energoresursov Predpriyaty Chernoi Metallurgii: *See—*
Shostak, Valentin M.; Tolochko, Alexei I.; Volkov, Vasily P.; Maradudin, Georgy I.; Schekin, Nikolai G.; Popov, Mikhail I.; Shepelev, Dmitry N.; Matveev, Anatoly I.; Butnyakov, Alexandr I.; and Rzhavichev, Anatoly P., 4,610,016, Cl. 373-137.000.

Vsesojuzny Nauchno-Issledovatelsky Institut Atomnogo Energeticheskogo Mashinostroenia: *See—*
Yastrebov, Andrei G., 4,608,945, Cl. 122-407.000.

W. R. Grace & Co.: *See—*
Cogliano, Joseph A., 4,609,695, Cl. 524-59.000.
Cuisia, Dionisio G.; and Hwa, Chih M., 4,609,483, Cl. 252-180.000.
Fischer, Wolfgang; and Krug, William, 4,609,511, Cl. 264-51.000.

W. Schlafhorst & Co.: *See—*
Bertrams, Josef; and Wey, Edmund, 4,608,816, Cl. 57-22.000.
Rohner, Joachim; Mauries, Reinhard; and Zumfeld, Heinz, 4,608,815, Cl. 57-22.000.

WABCO Westinghouse Fahrzeugbremsen GmbH: *See—*
Abel, Joachim; and Rovira, Juan, 4,609,239, Cl. 339-15.000.

Wachtler, William J.; and Yang, Thomas M., to MacLeod Laboratories, Inc. MWD tool for measuring weight and torque on bit. 4,608,861, Cl. 73-151.000.

Wacom Co., Ltd.: *See—*
Murakami, Azuma; Taguchi, Yoshinori; and Yamanami, Tsuguya, 4,609,776, Cl. 178-18.000.

Wada, Kenichi: *See—*
Morimoto, Takuo; Nishiuchi, Kihachiro; and Wada, Kenichi, 4,609,694, Cl. 423-598.000.

Wada, Kenzo: *See—*
Mizumura, Motoo; and Wada, Kenzo, 4,609,883, Cl. 331-96.000.

Wada, Minoru: *See—*
Sigyo, Masamiti; Wada, Minoru; and Takahashi, Yonosuke, 4,609,611, Cl. 430-270.000.

Wada, Yasuo: *See—*
Masao, Tamura; Kozuka, Hirotsugu; Wada, Yasuo; Ohkura, Makoto; Hiroshi, Tamura; Tokuyama, Takashi; Okabe, Takahiro; Minato, Osamu; and Ohba, Shinya, 4,609,407, Cl. 148-1.500.

Waddill, Harold G.: *See—*
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Wade, Bill R.; and Wade, Thelma L., to Olympus Industries, Inc. Frozen aerated fruit juice dessert. 4,609,561, Cl. 426-565.000.

Wade, Thelma L.: *See—*
Wade, Bill R.; and Wade, Thelma L., 4,609,561, Cl. 426-565.000.

Wagener Schwelm GmbH & Co.: *See—*
Fudickar, Harald; and Thies, Peter, 4,609,100, Cl. 198-854.000.

Waldorf Corporation: *See—*
Adamek, David J., 4,609,142, Cl. 229-17.0SC.

Walker, Jerry L.; Crummett, Donald L.; and Behling, William C., to Jet Research Center, Inc.; and Halliburton Company. Shaped charge carrier. 4,609,057, Cl. 175-4.600.

Walker, Loren H.: *See—*
Sember, James W.; and Walker, Loren H., 4,609,990, Cl. 364-484.000.

Walla, Gregg W., to Timberline Supply, Ltd. Furniture locking system. 4,609,233, Cl. 312-219.000.

Wallace Associated Research: *See—*
Wallace, Henry W., 4,608,875, Cl. 74-64.000.

Wallace, Gordon F.: *See—*
O'Brien, Michael J.; and Wallace, Gordon F., 4,609,810, Cl. 219-121.0PT.

Wallace, Henry W., to Wallace Associated Research. Inertial transmission. 4,608,875, Cl. 74-64.000.

Walto, Joseph J., to Toro Company, The. Sprinkler with improved riser seal. 4,609,146, Cl. 239-123.000.

Ward, Michael D.: *See—*
Tenhover, Michael A.; Henderson, Richard S.; Harris, Jonathan H.; Grasselli, Robert K.; and Ward, Michael D., 4,609,442, Cl. 204-95.000.

Ward, Robert C.: *See—*
D'Muhala, Thomas F.; and Ward, Robert C., 4,609,757, Cl. 564-151.000.

Warner-Lambert Company: *See—*
Rieger, Martin M., 4,609,677, Cl. 514-679.000.
Wittwer, Fritz; and Mayer, Jean-Philippe, 4,609,403, Cl. 106-122.000.

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McKee, Clyde M.; Scott, Ward; Warren, Henry A.; and Scott, Dennis G., 4,609,265, Cl. 350-605.000.

Washington Research Foundation: *See—*
Breidenthal, Robert E.; Lotz, Daniel E.; and Russell, David A., 4,608,979, Cl. 128-303.100.

Watanabe, Kazuo: *See—*
Yokoyama, Yoshihiro; Urata, Yoshito; Watanabe, Kazuo; and Ito, Kiyoteru, 4,609,277, Cl. 355-3.00R.

Watanabe, Yoshiaki, to Canon Kabushiki Kaisha. Small size camera. 4,609,271, Cl. 354-202.000.

Waters, Sidney W.: *See—*
Haslam, James K.; and Waters, Sidney W., 4,608,806, Cl. 53-314.000.

Watson, Frederick D., to Petrolite Corporation. Fluid inlet distributor. 4,609,010, Cl. 137-587.000.

Watts, Lewis W., Jr.; and Vanderpool, Steven H., to Texaco Inc. Continuous preparation of linear polyethylenepolyamines using novel catalysts derived from titania and a trialkyl phosphate or phosphite. 4,609,761, Cl. 564-479.000.

Weaver, Jimmie D.: *See—*
Hanlon, David J.; Wilson, J. Michael; and Weaver, Jimmie D., 4,609,475, Cl. 252-8.55B.

Webasto-Werk W. Baier GmbH & Co.: *See—*
Rummel, Wolfram, 4,608,834, Cl. 62-244.000.

Weber, Christian; Konig, Klaus; and Schmidt, Manfred, to Bayer Aktiengesellschaft. Process for the production of moldings. 4,609,682, Cl. 521-117.000.

Webers, Heinz: *See—*
Sotonyi, Thomas; Webers, Heinz; and Elle, Erich, 4,609,802, Cl. 219-56.000.

Wedemeyer, Karlfried: *See—*
Bohm, Siegfried; LeBlanc, Helmut; and Wedemeyer, Karlfried, 4,609,760, Cl. 564-402.000.

Wedig, John H.: *See—*
Davidson, Jeffrey; Babish, John G.; and Wedig, John H., 4,609,665, Cl. 514-335.000.

Wedtech Corp.: *See—*
Pinkhasov, Eduard, 4,609,564, Cl. 427-37.000.

Wegner, John W.: *See—*
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Wehner, Frank: *See—*
Rodrigues, Pedro; Bichsel, Heinz; and Wehner, Frank, 4,609,408, Cl. 148-2.000.

Wehrstein, Karl-Heinz: *See—*
Voelk, Karl-Hermann; and Wehrstein, Karl-Heinz, 4,608,758, Cl. 33-125.00R.

Weidlich, Erhard: *See—*
Edeling, Martin; Mund, Konrad; Rao, Raghavendra; and Weidlich, Erhard, 4,609,508, Cl. 264-29.600.

Weimer, Robert F.; and Miller, Robert N., to International Coal Refining Company. Coal liquefaction with preasphaltene recycle. 4,609,455, Cl. 208-412.000.

Weinheimer, Francis P.: *See—*
Goodman, Paul R.; and Weinheimer, Francis P., 4,609,865, Cl. 324-51.000.

Weise, Irvin B., deceased: *See—*
Anderson, William L., Jr.; McNeely, Michael D.; Weise, Irvin B., deceased; and Weise, Stanley A., executor, 4,609,008, Cl. 137-488.000.

Weise, Stanley A., executor: *See—*
Anderson, William L., Jr.; McNeely, Michael D.; Weise, Irvin B., deceased; and Weise, Stanley A., executor, 4,609,008, Cl. 137-488.000.

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Giesing, Herbert; Koerner, Gotz; Kropac, Vaclay; Patzke, Hans-Jurgen; Quilitsch, Herbert; Rau, Harald; Schamberg, Eckehard; Spieker, Fritz; and Weitemeyer, Christian, 4,609,752, Cl. 556-457.000.

Wells, John N., to Marconi Instruments Limited. Frequency synthesizers. 4,609,881, Cl. 331-1.00A.

Wess, Othmar: *See—*
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Westermeyer, Joseph, to Sursum Elektrizitatsgesellschaft Leyhausen GmbH & Co. Automatic switch with integral contact indicator. 4,609,895, Cl. 335-17.000.

Western Gear Corporation: *See—*
Ellis, Larry G.; and Radi, Gabor L., 4,608,907, Cl. 89-1.815.

Westinghouse Electric Corp.: *See—*
Carlson, Richard J.; and Kemeny, George A., 4,608,908, Cl. 89-8.000.

Davidson, Albert C.; and Boyle, David E., 4,609,522, Cl. 376-212.000.
Ferrari, Harry M., 4,609,524, Cl. 376-417.000.
Gerlowski, Thomas J., 4,609,523, Cl. 376-309.000.
Isenberg, Arnold O.; and Zymboly, Gregory E., 4,609,562, Cl. 427-8.000.

Wexler, Barry A., to Du Pont de Nemours, E. I., and Company. Herbicidal 3-[[(4,6-dimethoxypyrimidine-2-yl)aminocarbonyl]aminosulfonylmethyl]-1,5-dimethyl-1H-pyrazole-4-carboxylic acids, ethyl esters. 4,609,397, Cl. 71-92.000.

Wey, Edmund: *See—*
Bertrams, Josef; and Wey, Edmund, 4,608,816, Cl. 57-22.000.

Weyand, Harley P., Jr., to Firestone Tire & Rubber Company, The. System and apparatus for storing and processing strip material. 4,609,161, Cl. 242-55.000.

Wheeler, Alan: *See—*
Garman, Andrew J.; and Wheeler, Alan, 4,609,547, Cl. 424-88.000.

Wheeler, William R.; and Lee, Steven R., to Tencor Instruments. Apparatus for heating and cooling articles. 4,609,037, Cl. 165-61.000.

Whipp & Bourne Limited: *See—*
Morton, John S.; and Parkinson, James F., 4,609,797, Cl. 200-144.00R.

Whirlpool Corporation: *See—*
Spencer, Donald J.; and Larsen, Leonard O., 4,609,801, Cl. 219-10.55R.

White, Albert H.; Peck, Robert E.; Meyer, Gene A.; and Devanney, Raymond H., to Chandler Evans Inc. Dual stepper motor actuator for fuel metering valve. 4,608,820, Cl. 60-39.281.

White, Ambrose. Reciprocating piston engine. 4,608,951, Cl. 123-197.0AC.

White, Edward: *See—*
Manes, Kenneth; Premji, Zahirudeen; and White, Edward, 4,609,105, Cl. 206-444.000.

White, Lawrence K.; and Maa, Jen-shen, to RCA Corporation. Method of detecting alkali metal ions. 4,609,447, Cl. 204-192.00E.

White, O. Timothy, to Royston Corporation. Kiosk display unit. 4,608,773, Cl. 40-606.000.

Whitehead, Robert M. Boat hull with flow chamber. 4,609,360, Cl. 440-69.000.

Whittar Industries, Ltd.: *See—*
Ulmer, Harrold, 4,609,183, Cl. 256-1.000.

Wichterle, Ivan: *See—*
Wichterle, Otto; and Wichterle, Ivan, 4,609,507, Cl. 264-1.100.

Wichterle, Otto; and Havlin, Vladimir, to Ceskoslovenska Akademie Ved. Apparatus for inserting molds filled with a monomer mixture into rotating polymerization columns. 4,609,337, Cl. 425-145.000.

Wichterle, Otto; and Wichterle, Ivan, to Ceskoslovenska Akademi Ved. Method for casting polymeric gels from volatile mixtures of monomer in open molds and apparatus for performing this method. 4,609,507, Cl. 264-1.100.

Wickes Manufacturing Company: *See—*
Arbogast, Thomas P.; and Eilola, David, 4,609,913, Cl. 340-622.000.

Wiechert, Rudolf: *See—*
Rohde, Ralph; Annen, Klaus; Neef, Gunter; Wiechert, Rudolf; Beier, Sybille; Elger, Walter; and Henderson, David, 4,609,651, Cl. 514-179.000.

Wiegel, Roger E., to Rockwell International Corporation. Digital-to-analog/analog-to-digital dual mode circuit. 4,609,906, Cl. 340-347.00C.

Wieland, C. P.: *See—*
Wieland, Carl P., 4,609,482, Cl. 252-106.000.

Wieland, Carl P., to Wieland, C. P.; and Zillich, C. Washing and cleaning agent with antimycetic action. 4,609,482, Cl. 252-106.000.

Wiidakas, John D.: *See—*
Franklin, Andrew D.; Lothrop, John R.; and Wiidakas, John D., 4,609,778, Cl. 179-2.0DP.

Wiklund, Henry: *See—*
Nilsson, Goran; Edstrom, Kjell; and Wiklund, Henry, 4,609,054, Cl. 173-118.000.

Wild, Anton J. Bottle guide support assembly. 4,608,804, Cl. 53-262.000.

Wild, Walter; and Peters, Albert, to Ruhrkohle AG; and Peters, Albert. Cutting-tool mounting for rotary excavating head. 4,609,227, Cl. 299-93.000.

Wile, Hans C.: *See—*
Pillis, Joseph W.; and Wile, Hans C., 4,609,329, Cl. 417-282.000.

Wilkes, Elizabeth, to Union Oil Company of California. Rubberized asphalt emulsion. 4,609,696, Cl. 524-59.000.

Wilkinson, William C.: *See—*
Jensen, Warren M.; and Wilkinson, William C., 4,609,586, Cl. 428-209.000.

Williams, Barry W. Induction motor drive circuits. 4,609,859, Cl. 318-810.000.

Williams, Haydn R.: *See—*
Young, Robert N.; Rokach, Joshua; Williams, Haydn R.; Kakushima, Masatoshi; and Guindon, Yvan, 4,609,744, Cl. 549-402.000.

Williams, Joel: *See—*
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Williams, John L.: *See—*
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Williamson, Joanne M.: *See—*
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Williamson, Robert D.: *See—*
Grabkowski, Stephen E.; Schulz, Max W., Jr.; and Williamson, Robert D., 4,609,806, Cl. 219-95.000.

Willingham, T. Donald, to General Fabricators, Inc. Waste material container and closure fastening means. 4,609,125, Cl. 220-324.000.

Willis, Lyle E. Star dome structure. 4,608,789, Cl. 52-81.000.

Willson, Edwin G. Youth stirrup accessory. 4,608,812, Cl. 54-44.000.

Wilner, Leslie B., to Becton, Dickinson and Company. Glass inlays for use in bonding semiconductor wafers. 4,609,968, Cl. 361-320.000.

Wilson, Clive J., to Midland-Ross Corporation. Composite grinding mill liner. 4,609,158, Cl. 241-300.000.

Wilson, J. Michael: *See—*
Hanlon, David J.; Wilson, J. Michael; and Weaver, Jimmie D., 4,609,475, Cl. 252-8.55B.

Wilson, Kenneth E.: *See—*
Thorsett, Eugene D.; Williamson, Joanne M.; and Wilson, Kenneth E., 4,609,742, Cl. 549-271.000.

Wilson, Richard A. Process and apparatus for separating hydrocarbon gas into a residue gas fraction and a product fraction. 4,609,390, Cl. 62-21.000.

Wilson, Robert B.; Pomeroy, William F.; and Sovey, Louis T., Jr., to Crucible Chemical Company. Waterless dip dye composition and method of use thereof for textile-related materials. 4,609,375, Cl. 8-506.000.

Winchell, Vern H., II: *See—*
Scharr, Thomas A.; and Winchell, Vern H., II, 4,609,936, Cl. 357-68.000.

Winkelmann, Jurgen: *See—*
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Winkler, Alexander. Apparatus for severing work pieces. 4,608,897, Cl. 83-663.000.

Winter, Anthony A. Device for aiding in the collection, transport and dumping of refuse. 4,609,200, Cl. 280-5.200.

Wire Rope Industries Ltd.: *See—*
Smyth, Laurence C., 4,609,515, Cl. 264-174.000.

Wirth, Peter: *See—*
Martinen, Hinrich; Simonsson, Samuel S.; and Wirth, Peter, 4,610,014, Cl. 372-59.000.

Wisotsky, Max J.: *See—*
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Wittwer, Fritz; and Mayer, Jean-Philippe, to Warner-Lambert Company. Foam soft gelatin capsules and their method of manufacture. 4,609,403, Cl. 106-122.000.

Witzel, Frank: *See—*
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Wnek, Patrick H.: *See—*
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Wollenberg, Robert H., to Chevron Research Company. Modified succinimides (VIII). 4,609,378, Cl. 44-57.000.

Wondertex Limited: *See—*
Twigger, Ronald T.; and Dodkin, Raymond, 4,608,899, Cl. 83-745.000.

Wong, Shi-Yin; and Tangonan, Gregory L., to Hughes Aircraft Company. Organic optical waveguide device and method of making. 4,609,252, Cl. 350-96.120.

Wong, Sing: *See—*
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Wood, Clayton D.; and Gleason, Edward F., to Dow Chemical Company, The. Process for producing methane from hydrogen and carbon monoxide. 4,609,679, Cl. 518-715.000.

Wood, Thomas H. Method and apparatus for removing spindles and needle bearings. 4,608,738, Cl. 29-264.000.

Worlow, Joe G.: *See—*
Rodrigue, Kenneth J.; and Worlow, Joe G., 4,609,318, Cl. 414-132.000.

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Wren, Michael: *See—*
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Wright, Antony P.: *See—*
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Wright, Peter V.: *See—*
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Wrobel, Norbert E., to Minnesota Mining and Manufacturing Company. Wire identification label pad. 4,609,208, Cl. 283-81.000.

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Wyckoff, John W.: *See—*
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Wyrill, John B., III, to Wyrill Leasing, Inc. Apparatus for converting a chisel plow to a planter. 4,608,933, Cl. 111-85.000.

Wyrill Leasing, Inc.: *See*—
Wyrill, John B., III, 4,608,933, Cl. 111-85.000.
Wyss, Robert P., to Augat Inc. Adaptor for automatic testing equipment. 4,609,243, Cl. 339-17.00M.
Xerox Corporation: *See*—
Connell, G. A. Neville, 4,610,009, Cl. 369-110.000.
Knapp, John F.; Gruber, Robert J.; Floyd, Lawrence, Jr.; and Bolte, Steven B., 4,609,603, Cl. 430-39.000.
Lees, Barry A.; Flanagan, Robert J.; and Hordon, Monroe J., 4,609,605, Cl. 430-58.000.
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Yagyuu, Masayoshi; and Ito, Hiroyuki, to Hitachi, Ltd. High-speed logic circuit with a constant current source arrangement. 4,609,837, Cl. 307-455.000.
Yajima, Motoyuki: *See*—
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Ohishi, Yoshitaka; Nagahara, Michiko; Takehisa, Yoshitaka; Yajima, Motoyuki; Kurokawa, Shigeki; Kajikawa, Norio; and Itoh, Akira, 4,609,736, Cl. 548-183.000.
Yamada, Hideaki; Shimizu, Sakayu; and Shiozaki, Shozo, to Nippon Zeon Co., Ltd. Method for producing S-adenosyl-L-homocysteine hydrolase. 4,609,626, Cl. 435-195.000.
Yamada, Hiroyuki: *See*—
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Yamada, Kenichi: *See*—
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Yamagiwa, Kazuo; Nishitani, Kiyoshi; Takeuchi, Koichi; and Sato, Seiji, to Sony Corporation. Video signal recording apparatus. 4,609,947, Cl. 358-310.000.
Yamaguchi, Hiroshi; Shimase, Akira; Miyauchi, Tateoki; and Hongo, Mikio, to Hitachi, Ltd. Method and apparatus for correcting delicate wiring of IC device. 4,609,809, Cl. 219-121.0EM.
Yamaguchi, Jun-ichi: *See*—
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Yamamoto, Minoru; and Harada, Masatomi, to Yamanouchi Pharmaceutical Co. Ltd. Medical agent for improving and treating mental symptoms induced by cerebral disturbances. 4,609,656, Cl. 514-239.000.
Yamamoto, Toshifumi: *See*—
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Yamashita, Hajime; Hirao, Toshiyuki; and Yamazaki, Masatoshi, to Toshiba Ceramics Co., Ltd. Skid button structure. 4,609,347, Cl. 432-234.000.
Yamashita, Yoshio; and Kawazu, Ryuji, to Oki Electric Industry Co., Ltd. Process for forming pattern with negative resist using quinone diazide compound. 4,609,615, Cl. 430-325.000.
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Yamazaki, Tsuneo, to Seiko Instruments & Electronics Ltd. Thin film transistor. 4,609,930, Cl. 357-23.700.
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Yang, Thomas M.: *See*—
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Yanovsky, Jorge F. Method for improving the specificity of immunoassays. 4,609,630, Cl. 436-519.000.
Yasaki, Susumu; Ishiai, Yoshinori; Mitsushima, Susumu; and Nakamura, Takashi, to Shinko Electric Co., Ltd.; and Secom Co., Ltd. Apparatus for automatically extinguishing fire. 4,609,048, Cl. 169-61.000.
Yashiki, Takatsuka: *See*—
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Yastrebov, Andrei G., to Vsesojuzny Nauchno-Issledovatelsky Institut Atomnogo Energeticheskogo Mashinostroenia. Apparatus for recirculating boiler fluid. 4,608,945, Cl. 122-407.000.
Yasui Sangyo, Ltd.: *See*—
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Yates, Donald N., Jr.: *See*—
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Yates, Douglas A., to Mobil Solar Energy Corporation. Method of fabricating solar cells. 4,609,565, Cl. 427-38.000.
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Yatsunami, Joji; and Araki, Tamio, to Bridgestone Corporation. Pneumatic radial tire cord for belt. 4,609,024, Cl. 152-527.000.
Yau, Ben J., to Owens-Corning Fiberglas Corporation. Mat binders. 4,609,709, Cl. 525-164.000.
Yazaki, Mutsunobu: *See*—
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Yen, Terence T.: *See*—
Dominianni, Samuel J.; and Yen, Terence T., 4,609,670, Cl. 514-399.000.
Yokota, Hideo; Kato, Masatake; and Nishimura, Tetsuharu, to Canon Kabushiki Kaisha. Finder system of high image magnification. 4,609,272, Cl. 354-225.000.
Yokota, Masami: *See*—
Inamoto, Tadayoshi; Yokota, Masami; and Sugitani, Hiroshi, 4,609,427, Cl. 156-633.000.
Yokoyama, Naoki: *See*—
Toyokura, Nobuo; Ohnishi, Toyokazu; and Yokoyama, Naoki, 4,609,903, Cl. 338-22.0SD.
Yokoyama, Yoshihiro; Urata, Yoshito; Watanabe, Kazuo; and Ito, Kiyoteru, to Matsushita Electric Industrial Co., Ltd. Electro photographic copier with photoconductive belt. 4,609,277, Cl. 355-3.00R.
Yolton, Charles F.: *See*—
Haswell, Walter T.; and Yolton, Charles F., 4,609,526, Cl. 419-23.000.
Yoneyama, Fumiaki: *See*—
Esashi, Yasuyoshi; Yoneyama, Fumiaki; and Ogihara, Yoshihisa, 4,609,499, Cl. 260-414.000.
Yoon, Heeyoung; and Burke, Francis P., to Conoco Inc. Method for producing reactive lime and reducing sulfur dioxide. 4,609,536, Cl. 423-244.000.
York, Billie M., Jr., to Alcon Laboratories, Inc. Aldose reductase inhibitors useful in glaucoma therapy. 4,609,663, Cl. 514-278.000.
Yoshida Kogyo K. K.: *See*—
Miyakawa, Kazuo; Osaki, Tatsuo; Sawada, Toshiaki; and Ishikawa, Kiichiro, 4,608,745, Cl. 29-408.000.
Yoshida, Mamoru: *See*—
Kozawa, Kunio; Ishikawa, Soichi; and Yoshida, Mamoru, 4,609,939, Cl. 358-101.000.
Yoshida, Naoyuki: *See*—
Kitano, Kisei; Ogawa, Tetsuya; Goto, Yasuyuki; and Yoshida, Naoyuki, 4,609,485, Cl. 252-299.610.
Yoshida, Tadashi, to Canon Kabushiki Kaisha. Image recording apparatus with divided memory. 4,609,927, Cl. 346-154.000.
Yoshihara, Kiyoshi: *See*—
Naniwa, Isao; Nishida, Kazuo; and Yoshihara, Kiyoshi, 4,609,234, Cl. 312-296.000.
Yoshimura, Tamotsu; and Nakamura, Masahiko, to Mitsubishi Chemical Industries Limited. Wholly aromatic polyester. 4,609,720, Cl. 528-190.000.
Yoshimura, Yoshinobu; Nishida, Yoko; and Yashiki, Takatsuka, to Takeda Chemical Industries, Ltd. Double ester of 16β-ethylestran-17β-ol derivatives. 4,609,650, Cl. 514-178.000.
Yoshino Kogyosho Co., Ltd.: *See*—
Yoshino, Yataro; Oshida, Mamoru; and Mitani, Katsuji, 4,609,418, Cl. 156-87.000.
Yoshino, Tadashi; and Ohta, Yutaka, to Matsushita Electric Industrial Co., Ltd. Recording and reproducing apparatus. 4,609,952, Cl. 360-70.000.
Yoshino, Yataro; Oshida, Mamoru; and Mitani, Katsuji, to Yoshino Kogyosho Co., Ltd. Hollow container of biaxially oriented synthetic resin engaged with base cap on bottom and method of engaging the cap with the container. 4,609,418, Cl. 156-87.000.

Yoshizawa, Toshio, to Tachikawa Spring Co., Ltd. Vehicle seat. 4,609,226, Cl. 297-452.000.

Yost, Wayne R.; and Tipton, Lynn, to Cadillac Rubber & Plastics, Inc. Structural gasket wall. 4,608,793, Cl. 52-235.000.

Younes, Usama E., to Atlantic Richfield Company. Flame retardant molded composition which incorporates a poly(N-(bromophenyl)-maleimide-Co-styrene-Co-N-phenylmaleimide) copolymer. 4,609,711, Cl. 525-186.000.

Young, Robert N.; Rokach, Joshua; Williams, Haydn R.; Kakushima, Masatoshi; and Guindon, Yvan, to Merck Frosst Canada Inc. 4-oxo-benzopyran carboxylic acids. 4,609,744, Cl. 549-402.000.

Yu, KeeChung: *See*—
Schols, John A.; and Yu, KeeChung, 4,609,693, Cl. 523-465.000.

Yuda, Mitsuharu; Sakka, Hiroshi; Yamada, Kenichi; Koizumi, Yoshihito; and Yamaguchi, Takeshi, to Riken Vitamin Company, Ltd. Novel emulsifier composition and quality improvement method for starch-containing foods. 4,609,560, Cl. 426-653.000.

Yugen Kaisha Go Chuio Tekkosho: *See*—
Go, Seitaro, 4,609,219, Cl. 294-82.240.

Yui, Yoshikazu, to Silver Seiko Ltd. Automatic envelope sealing device. 4,609,421, Cl. 156-442.100.

Z. Bavelloni S.p.A.: *See*—
Bavelloni, Franco, 4,608,783, Cl. 51-127.000.

Zamek, Otto S., to General Electric Company. Ether modified polyesterimide resins. 4,609,702, Cl. 524-317.000.

Zargarian, Sergei Y.: *See*—
Scheglov, Jury A.; Koval, Nikolai P.; Furer, Leonid A.; Zargarian, Sergei Y.; Skimbov, Anatoly A.; Belik, Vladimir G.; Zharik, Boris N.; Papchenko, Andrei Y.; Ryabinsky, Filipp G.; Sergeev, Alexandr S., deceased; and Sergeeva, Galina A., administrator, 4,608,920, Cl. 99-451.000.

Zavesky, Ralph J.; Sovey, James S.; Mirtich, Michael J.; Marinos, Charalampus; and Penko, Paul F., to United States of America, National Aeronautics and Space Administration. Heat exchanger for electrothermal devices. 4,608,821, Cl. 60-203.100.

Zboralski, Ullrich; and Dorn, Karlheinz, to Chemische Fabrik Budenheim, Rudolf A. Oetker. Method of producing soft cheese. 4,609,553, Cl. 426-36.000.

Zeiss Ikon AG: *See*—
Tietz, Werner, 4,608,842, Cl. 70-358.000.

Zemlo, Bridgett: *See*—
Moore, David N.; and Zemlo, Bridgett, 4,609,115, Cl. 215-252.000.

Zenith Electronics Corporation: *See*—
Campisi, Carl; and Schmid, Richard G., 4,609,319, Cl. 414-224.000.

Zenner, Bruce D.: *See*—
Bonaventura, Joseph; Bonaventura, Celia; Van Ryzin, Joseph C.; and Zenner, Bruce D., 4,609,383, Cl. 55-16.000.

Zerl, Wolfgang: *See*—
Born, Hans-Joachim; Duschka, Hartmut; Seyler, Gerhard; and Zerl, Wolfgang, 4,609,940, Cl. 358-111.000.

Zharik, Boris N.: *See*—
Scheglov, Jury A.; Koval, Nikolai P.; Furer, Leonid A.; Zargarian, Sergei Y.; Skimbov, Anatoly A.; Belik, Vladimir G.; Zharik, Boris N.; Papchenko, Andrei Y.; Ryabinsky, Filipp G.; Sergeev, Alexandr S., deceased; and Sergeeva, Galina A., administrator, 4,608,920, Cl. 99-451.000.

Ziegelhoffer, Paul: *See*—
Savich, Peter P.; and Ziegelhoffer, Paul, 4,609,367, Cl. 493-194.000.

Ziegenbein, Keith J. Automatic touch actuated door opener. 4,609,122, Cl. 220-211.000.

Ziegler, Bodo, to Robert Bosch GmbH. Oxygen measuring sensor. 4,609,454, Cl. 204-427.000.

Ziemecki, Stanislaw B.: *See*—
Mabry, Melinda A.; Prichard, William W.; and Ziemecki, Stanislaw B., 4,609,636, Cl. 502-183.000.

Zillich, C.: *See*—
Wieland, Carl P., 4,609,482, Cl. 252-106.000.

Zimmerman, John M.: *See*—
Bishop, Timothy E.; Coady, Clive J.; and Zimmerman, John M., 4,609,718, Cl. 528-49.000.

Zoche, Guenter: *See*—
Neuschaeffer, Karl H.; Spielau, Paul; Engels, Hans-Werner; and Zoche, Guenter, 4,608,795, Cl. 52-309.120.

Zollner, Dieter: *See*—
Hill, Derek; Lauterbach-Dammler, Inge; Taube, Tom; and Zollner, Dieter, 4,610,015, Cl. 373-93.000.

Zook, Jonathan D.: *See*—
Morris, Lester; Singh, Hakam; and Zook, Jonathan D., 4,609,762, Cl. 568-38.000.

Zoran Corporation: *See*—
Brandman, Yigal, 4,609,830, Cl. 307-202.100.

Zorzetto, Renato, to STEMA S.a.s. di Zorzetto Renato and Co. Armchair or sofa structure transformable into a bed. 4,608,722, Cl. 5-18.00R.

Zufang, Arthur A.; and Fabrie, Robert A. M. J., to Stork Brabant BV. Apparatus for making a web of plastic material. 4,609,423, Cl. 156-555.000.

Zumfeld, Heinz: *See*—
Rohner, Joachim; Mauries, Reinhard; and Zumfeld, Heinz, 4,608,815, Cl. 57-22.000.

Zweifel, Terry L., to Sperry Corporation. Automatic prediction and capture of a preselected altitude for aircraft. 4,609,988, Cl. 364-433.000.

Zwick Energy Research Organization, Inc.: *See*—
Neugen, Dink; Bull, Stephen M.; and Ferramola, Gabriel D., 4,609,003, Cl. 137-2.000.

Zymboly, Gregory E.: *See*—
Isenberg, Arnold O.; and Zymboly, Gregory E., 4,609,562, Cl. 427-8.000.

4C Electronics, Inc.: *See*—
Peterson, Jerold J., 4,609,241, Cl. 339-17.0CF.

501 Beheermaatschappij H.D. Groeneveld B.V.: *See*—
Groeneveld, Dirk H., 4,609,305, Cl. 405-195.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2ND DAY OF SEPTEMBER, 1986

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

DeMarco, JoAnn, to Loctite Corporation. Self-emulsifying anaerobic composition. Re. 32,240, Cl. 526-328.000.

General Electric Company: *See—*
Johnston, Richard P., Re. 32,238, Cl. 415-199.500.

Johnston, Richard P., to General Electric Company. Turbine arrangement. Re. 32,238, Cl. 415-199.500.

Loctite Corporation: *See—*
DeMarco, JoAnn, Re. 32,240, Cl. 526-328.000.

Mobil Oil Corporation: *See—*
Schwartz, Albert B., Re. 32,239, Cl. 502-45.000.

Owens-Illinois, Inc.: *See—*
Willingham, Wendell D., Re. 32,237, Cl. 53-314.000.

Schwartz, Albert B., to Mobil Oil Corporation. Moving bed catalytic cracking process with platinum group metal or rhenium supported directly on the cracking catalyst. Re. 32,239, Cl. 502-45.000.

Willingham, Wendell D., to Owens-Illinois, Inc. Closure pre-tightener for closure applicating machines. Re. 32,237, Cl. 53-314.000.

LIST OF DESIGN PATENTEES

Adler, Alan J. Boomerang. 285,461, 9-2-86, Cl. D21-85.000.

Advanced Technology Laboratories, Inc.: *See—*
LaCelle, Leroy J.; and Ungar, Joseph L., 285,484, Cl. D24-1.100.

American Meter Company: *See—*
Hicks, Irwin A., 285,431, Cl. D13-12.000.

Anthony, James R., to Indiana Mills & Manufacturing, Inc. Seat belt T-bar. 285,383, 9-2-86, Cl. D2-405.000.

Atun, Albert: *See—*
De Luca, Paul V.; Fasano, Michael; and Atun, Albert, 285,433, Cl. D13-24.000.

Aurora Konrad G. Schulz GmbH & Co.: *See—*
Schulz, Joachim, 285,480, Cl. D23-115.000.

B.F.R. Home Care, Inc.: *See—*
Curran, Kevin; and Brunet, Charles H., 285,394, Cl. D6-426.000.

Barineau, James E. Game board. 285,457, 9-2-86, Cl. D21-34.000.

Bellis, Robert D.: *See—*
Tod, Timothy W.; Tod, Roger J.; and Bellis, Robert D., 285,455, Cl. D20-9.000.

Berman, Seymour S., to Oxygen Therapy Institute, Inc. Inhalation mask. 285,496, 9-2-86, Cl. D29-8.000.

Beychok, Alan M.: *See—*
Schornstein, Michael M.; and Beychok, Alan M., 285,382, Cl. D2-283.000.

Blackburn, James R.; and Gentes, James J., to Jim Blackburn Designs, Inc. Rear pannier rack for bicycles. 285,426, 9-2-86, Cl. D12-158.000.

Born, Gerald W., to Quality Products, Inc. Pressure vessel or similar article. 285,475, 9-2-86, Cl. D23-2.000.

Breger, Carl-Arne, to Fiskeby Aktiebolag. Liquid soap dispenser. 285,397, 9-2-86, Cl. D6-545.000.

Brodrene Gram A/S: *See—*
Gram, Klaus, 285,380, Cl. D1-110.000.

Brownbill, Thomas D., to Metal Box p.l.c. Closure for container or the like. 285,415, 9-2-86, Cl. D9-438.000.

Brunet, Charles H.: *See—*
Curran, Kevin; and Brunet, Charles H., 285,394, Cl. D6-426.000.

Brunker, Gary L., to Sports Buckles, Inc. Football helmet buckle. 285,388, 9-2-86, Cl. D2-431.000.

Buckler, George M., to General Electric Company. Combined handset telephone and cradle set. 285,437, 9-2-86, Cl. D14-53.000.

Buddie, Walter. Mustache trimmer. 285,495, 9-2-86, Cl. D28-46.000.

Burroughs Corporation: *See—*
McGuire, James F., 285,442, Cl. D14-66.000.

Cable Electric Products, Inc.: *See—*
Schwartz, Frederic W., 285,419, Cl. D10-40.000.

Carlson, Arthur R., to Decor Corporation Pty, Ltd., The. Combined food container and bottle. 285,413, 9-2-86, Cl. D9-337.000.

Case, Robert; Holland, A. Ronald; and Kennedy, Joe H., to Syntex (U.S.A.) Inc. Drawer front or similar article. 285,395, 9-2-86, Cl. D6-494.000.

Cesaroni, William C.: *See—*
Gremonprez, Dan E.; and Cesaroni, William C., 285,420, Cl. D10-40.000.

Chen, Tung S. Telephone. 285,438, 9-2-86, Cl. D14-53.000.

Christen, Hans D., to Rain Bird Sprinkler Mfg. Corp. Impact drive sprinkler. 285,476, 9-2-86, Cl. D23-7.000.

Chrysler Corporation: *See—*
Dayton, William A.; Crain, John E.; and Hubbach, Robert N., 285,429, Cl. D12-196.000.
Dayton, William A.; Crain, John E.; and Hubbach, Robert N., 285,430, Cl. D12-196.000.

Citizen Watch Co., Ltd.: *See—*
Ohtsu, Yutaka, 285,443, Cl. D14-77.000.

Cline, Jack B. Wind shield attachment for a motorcycle handlebar. 285,427, 9-2-86, Cl. D12-181.000.

Cline, Jack B. Windshield attachment for a motorcycle. 285,428, 9-2-86, Cl. D12-182.000.

Clivio, Franco; and Raffler, Dieter, to Gardena Kress & Kastner GmbH. Grass-shear. 285,407, 9-2-86, Cl. D8-5.000.

Coin Controls Ltd.: *See—*
Tod, Timothy W.; Tod, Roger J.; and Bellis, Robert D., 285,455, Cl. D20-9.000.

Combi Co., Ltd.: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; Matsuda, Hiroaki; and Sato, Tomiko, 285,458, Cl. D21-59.000.

Con-Trac Packaging, Inc.: *See—*
Harwell, George H., Jr., 285,412, Cl. D9-345.000.

Crain, John E.: *See—*
Dayton, William A.; Crain, John E.; and Hubbach, Robert N., 285,429, Cl. D12-196.000.
Dayton, William A.; Crain, John E.; and Hubbach, Robert N., 285,430, Cl. D12-196.000.

Curran, Kevin; and Brunet, Charles H., to B.F.R. Home Care, Inc. Desk. 285,394, 9-2-86, Cl. D6-426.000.

Dart Container Corporation: *See—*
Dart, William A.; and Dart, Kenneth B., 285,416, Cl. D9-447.000.

Dart Industries, Inc.: *See—*
Gremonprez, Dan E.; and Cesaroni, William C., 285,420, Cl. D10-40.000.
Gremonprez, Dan E., 285,472, Cl. D21-195.000.

Dart, Kenneth B.: *See—*
Dart, William A.; and Dart, Kenneth B., 285,416, Cl. D9-447.000.

Dart, William A.; and Dart, Kenneth B., to Dart Container Corporation. Lid for a container. 285,416, 9-2-86, Cl. D9-447.000.

Davis, Arnold M.; and Lucente, Samuel A., to International Business Machines Corporation. Cursor for a graphics tablet. 285,445, 9-2-86, Cl. D14-114.000.

Davis, David R. Toy construction piece. 285,463, 9-2-86, Cl. D21-108.000.

Dawson, Chris R.; and Parks, Gerald R., to Gregory, John R. Motorcycle helmet. 285,381, 9-2-86, Cl. D2-232.000.

Dayton, William A.; Crain, John E.; and Hubbach, Robert N., to Chrysler Corporation. Automobile body side panel exterior surface. 285,429, 9-2-86, Cl. D12-196.000.

Dayton, William A.; Crain, John E.; and Hubbach, Robert N., to Chrysler Corporation. Automobile sliding side door panel exterior surface. 285,430, 9-2-86, Cl. D12-196.000.

Decor Corporation Pty, Ltd., The: *See—*
Carlson, Arthur R., 285,413, Cl. D9-337.000.

De Luca, Paul V.; Fasano, Michael; and Atun, Albert, to Porta Systems Corp. Telephone connector block or similar article. 285,433, 9-2-86, Cl. D13-24.000.

Diehl GmbH & Co.: *See—*
Keichel, Klaus, 285,418, Cl. D10-40.000.

Dilot, Rolf M., to Tetra Pak International AB. Spoon. 285,399, 9-2-86, Cl. D7-138.000.

Dudeck, Carl G.; and Lametto, Richard A., to Nash Engineering Company, The. Two-stage pump. 285,447, 9-2-86, Cl. D15-7.000.

Ehco, Inc.: *See—*
Erickson, Frederick J., 285,401, Cl. D7-332.000.

Electromagnetic Technology, Inc.: *See—*
Meyer, Jack R., 285,421, Cl. D10-40.000.

Erickson, Frederick J., to Ehco, Inc. Barbeque unit. 285,401, 9-2-86, Cl. D7-332.000.

Fasano, Michael: *See—*
De Luca, Paul V.; Fasano, Michael; and Atun, Albert, 285,433, Cl. D13-24.000.

Fiihr, Arnold C. Spinning top. 285,462, 9-2-86, Cl. D21-96.000.

Fiskeby Aktiebolag: *See—*
Breger, Carl-Arne, 285,397, Cl. D6-545.000.
Flood, James J., to Orizaba Golf Products, Inc. Golf club head. 285,473, 9-2-86, Cl. D21-214.000.
Gardena Kress & Kastner GmbH: *See—*
Clivio, Franco; and Raffler, Dieter, 285,407, Cl. D8-5.000.
General Electric Company: *See—*
Buckler, George M., 285,437, Cl. D14-53.000.
Klucznik, Paul J.; and Redding, Edward P., Jr., 285,436, Cl. D14-53.000.
Gentes, James J.: *See—*
Blackburn, James R.; and Gentes, James J., 285,426, Cl. D12-158.000.
George, William; and Norwood, Phillip. Toy weapon. 285,467, 9-2-86, Cl. D21-147.000.
Goetz, Elmer; and Urion, Kenard E., to Scott Paper Company. Packaging container. 285,414, 9-2-86, Cl. D9-420.000.
Gold Lance Corporation: *See—*
Marcus, Stuart A., 285,423, Cl. D11-28.000.
Gram, Klaus, to Brodrene Gram A/S. Icecream figure. 285,380, 9-2-86, Cl. D1-110.000.
Grange, Kenneth H., to Thorn Emi Domestic Appliances Limited. Bowl. 285,405, 9-2-86, Cl. D7-412.000.
Gregory, John R.: *See—*
Dawson, Chris R.; and Parks, Gerald R., 285,381, Cl. D2-232.000.
Gremonprez, Dan E.; and Cesaroni, William C., to Dart Industries, Inc. Timer with compartment. 285,420, 9-2-86, Cl. D10-40.000.
Gremonprez, Dan E., to Dart Industries Inc. Rowing machine. 285,472, 9-2-86, Cl. D21-195.000.
Grimes, Gary, to Timex Corporation. Watch strap. 285,422, 9-2-86, Cl. D11-4.000.
Grubb, Lawrence B.; Williams, David M.; and Simpson, Danny E., to Johnson & Johnson Baby Products Company. Return top rattle. 285,460, 9-2-86, Cl. D21-65.000.
Haggard, Merry: *See—*
Haggard, Robert E., 285,406, Cl. D8-1.000.
Haggard, Robert E., to Haggard, Merry. Tree drain grate or similar article. 285,406, 9-2-86, Cl. D8-1.000.
Hamill, Steve; and Knight, Arthur A. Portable cooking grill. 285,402, 9-2-86, Cl. D7-335.000.
Harwell, George H., Jr., to Con-Trac Packaging, Inc. Flexible package for granulized solids, liquids or the like. 285,412, 9-2-86, Cl. D9-345.000.
Hashii, Toshimitsu, to Ryobi Ltd. Electric planer. 285,448, 9-2-86, Cl. D15-127.000.
Hengesbach, Robert W. Combined trigger sprayer and container. 285,477, 9-2-86, Cl. D23-18.000.
Hengesbach, Robert W. Flow control valve. 285,478, 9-2-86, Cl. D23-19.000.
Hengesbach, Robert W. Combined flow control valve and nozzle. 285,479, 9-2-86, Cl. D23-20.000.
Hestair Kiddicraft Limited: *See—*
Thomson, Harry S.; Raffo, David M.; and Pape, John A., 285,459, Cl. D21-65.000.
Thomson, Harry S.; Raffo, David M.; and Pape, John A., 285,470, Cl. D21-149.000.
Thomson, Harry S.; Raffo, David M.; and Pape, John A., 285,471, Cl. D21-149.000.
Heu, Incorporated: *See—*
Winters, Paul T., 285,398, Cl. D6-567.000.
Hicks, Irwin A., to American Meter Company. Unit for resetting or presetting a remote meter display. 285,431, 9-2-86, Cl. D13-12.000.
Hishinuma, Takashi, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Four wheeled motorcycle. 285,424, 9-2-86, Cl. D12-107.000.
Hoehne, George, to Slater Electric Inc. Multiple outlet strip. 285,435, 9-2-86, Cl. D13-30.000.
Holland, A. Ronald: *See—*
Case, Robert; Holland, A. Ronald; and Kennedy, Joe H., 285,395, Cl. D6-494.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Nakano, Koji; and Matsuzawa, Masakazu, 285,425, Cl. D12-110.000.
Hoshino Gakki Co., Ltd.: *See—*
Hoshino, Yoshiki, 285,453, Cl. D17-22.000.
Hoshino, Yoshiki, to Hoshino Gakki Co., Ltd. Electronic drum. 285,453, 9-2-86, Cl. D17-22.000.
Hubbach, Robert N.: *See—*
Dayton, William A.; Crain, John E.; and Hubbach, Robert N., 285,429, Cl. D12-196.000.
Dayton, William A.; Crain, John E.; and Hubbach, Robert N., 285,430, Cl. D12-196.000.
Indiana Mills & Manufacturing, Inc.: *See—*
Anthony, James R., 285,383, Cl. D2-405.000.
International Business Machines Corporation: *See—*
Davis, Arnold M.; and Lucente, Samuel A., 285,445, Cl. D14-114.000.
Isaacs, Robert B., to Northern Telecom Limited. Telephone set add-on accessory stand. 285,440, 9-2-86, Cl. D14-59.000.
Isaacs, Robert B., to Northern Telecom Limited. Telephone set base. 285,441, 9-2-86, Cl. D14-60.000.
Ishii, Yoshiyasu: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; Matsuda, Hiroaki; and Sato, Tomiko, 285,458, Cl. D21-59.000.
Jim Blackburn Designs, Inc.: *See—*
Blackburn, James R.; and Gentes, James J., 285,426, Cl. D12-158.000.
Johnson & Johnson Baby Products Company: *See—*
Grubb, Lawrence B.; Williams, David M.; and Simpson, Danny E., 285,460, Cl. D21-65.000.
Kahute, Robert M., to Warner-Lambert Technologies, Inc. Refractometer. 285,485, 9-2-86, Cl. D24-17.000.
Keichel, Klaus, to Diehl GmbH & Co. Household timer. 285,418, 9-2-86, Cl. D10-40.000.
Kennedy, Joe H.: *See—*
Case, Robert; Holland, A. Ronald; and Kennedy, Joe H., 285,395, Cl. D6-494.000.
Kirk, Alexis V., to Somersett Moon Ltd. Belt buckle. 285,384, 9-2-86, Cl. D2-422.000.
Kirk, Alexis V., to Somersett Moon Ltd. Belt buckle. 285,385, 9-2-86, Cl. D2-422.000.
Kirk, Alexis V., to Somersett Moon Ltd. Belt buckle. 285,386, 9-2-86, Cl. D2-422.000.
Kirk, Alexis V., to Somersett Moon Ltd. Belt buckle. 285,387, 9-2-86, Cl. D2-422.000.
Klucznik, Paul J.; and Redding, Edward P., Jr., to General Electric Company. Combined handset telephone and cradle set. 285,436, 9-2-86, Cl. D14-53.000.
Knight, Arthur A.: *See—*
Hamill, Steve; and Knight, Arthur A., 285,402, Cl. D7-335.000.
Koizumi, Satoshi, to Takara Co., Ltd. Reconfigurable toy cassette. 285,464, 9-2-86, Cl. D21-111.000.
Kosako, Mikio; and Nishibori, Hiroshi, to Sharp Corporation. Electronic copying machine. 285,451, 9-2-86, Cl. D16-31.000.
LaCelle, Leroy J.; and Ungar, Joseph L., to Advanced Technology Laboratories, Inc. Medical ultrasound scanner. 285,484, 9-2-86, Cl. D24-1.100.
Lachapelle, Robert. Wind generator housing. 285,446, 9-2-86, Cl. D15-1.000.
Lametto, Richard A.: *See—*
Dudeck, Carl G.; and Lametto, Richard A., 285,447, Cl. D15-7.000.
Lemkin, Jack L.; and Zilber, Eugene A., to O. M. Scott & Sons Company, The. Holder for irrigation tubing. 285,409, 9-2-86, Cl. D8-356.000.
Lucente, Samuel A.: *See—*
Davis, Arnold M.; and Lucente, Samuel A., 285,445, Cl. D14-114.000.
Mahoney, Nathaniel J. Chimney brace. 285,411, 9-2-86, Cl. D8-366.000.
Marcus, Stuart A., to Gold Lance Corporation. Class ring. 285,423, 9-2-86, Cl. D11-28.000.
Marinkovich, Vincent A.; Sell, William J.; and Riege, David H., to Mast Immunosystems, Ltd. Biological reaction cell. 285,486, 9-2-86, Cl. D24-29.000.
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McElfresh, Sarah C. Disposable protective mask. 285,497, 9-2-86, Cl. D29-8.000.
McGuire, James F., to Burroughs Corporation. Key-board face for an automatic dialing telephone set. 285,442, 9-2-86, Cl. D14-66.000.
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Meyer, Jack R., to Electromagnetic Technology, Inc. Timer mechanism. 285,421, 9-2-86, Cl. D10-40.000.
Miller, Philip V. D. Clothes tree or similar article. 285,393, 9-2-86, Cl. D6-412.000.
Mills, Harry R. Garment hanger carrier. 285,391, 9-2-86, Cl. D6-328.000.
Motorola, Inc.: *See—*
Nagele, Albert L., 285,439, Cl. D14-59.000.
Nagele, Albert L., to Motorola, Inc. Power source converter and handset attachment for vehicular radio telephone, or similar article. 285,439, 9-2-86, Cl. D14-59.000.
Nakamura, Kazuharu, to Toyotomi Kogyo Co., Ltd. Oil-fired space heater. 285,481, 9-2-86, Cl. D23-124.000.
Nakamura, Kazuharu, to Toyotomi Kogyo Co., Ltd. Oil-fired space heater. 285,482, 9-2-86, Cl. D23-124.000.
Nakamura, Kazuharu, to Toyotomi Kogyo Co., Ltd. Oil-fired space heater. 285,483, 9-2-86, Cl. D23-124.000.
Nakane, Shigeru, to Takara Co., Ltd. Combined wristwatch and toy aircraft. 285,417, 9-2-86, Cl. D10-33.000.
Nakanishi, Kisaku. Horseshoe assembly. 285,499, 9-2-86, Cl. D30-35.000.
Nakano, Koji; and Matsuzawa, Masakazu, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 285,425, 9-2-86, Cl. D12-110.000.
Nakao, Shinroku; Ishii, Yoshiyasu; Matsuda, Hiroaki; and Sato, Tomiko, to Combi Co., Ltd. Toy rattle. 285,458, 9-2-86, Cl. D21-59.000.
Nash Engineering Company, The: *See—*
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Ohno, Kouzin, to Takara Co., Ltd. Reconfigurable toy vehicle. 285,465, 9-2-86, Cl. D21-136.000.
Ohno, Kouzin, to Takara Co., Ltd. Reconfigurable toy vehicle. 285,466, 9-2-86, Cl. D21-136.000.
Ohtsu, Yutaka, to Citizen Watch Co., Ltd. Portable television set. 285,443, 9-2-86, Cl. D14-77.000.
Orizaba Golf Products, Inc.: *See—*
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Russell, James P. Corner lamp. 285,489, 9-2-86, Cl. D26-86.000.
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Schwartz, Frederic W., to Cable Electric Products, Inc. Timer. 285,419, 9-2-86, Cl. D10-40.000.
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Thompson, Harry. Combination desk unit. 285,392, 9-2-86, Cl. D6-399.000.
Thomson, Harry S.; Raffo, David M.; and Pape, John A., to Hestair Kiddicraft Limited. Spinning toy rattle. 285,459, 9-2-86, Cl. D21-65.000.
Thomson, Harry S.; Raffo, David M.; and Pape, John A., to Hestair Kiddicraft Limited. Pull toy. 285,470, 9-2-86, Cl. D21-149.000.
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Tod, Timothy W.; Tod, Roger J.; and Bellis, Robert D., to Coin Controls Ltd. Payout component for a coin dispenser. 285,455, 9-2-86, Cl. D20-9.000.
Tosch, Richard P. Skin/scuba diver utility board. 285,474, 9-2-86, Cl. D21-228.000.
Tovey, Geoffrey D., to Smith Kline & French Laboratories Limited. Pharmaceutical tablet. 285,490, 9-2-86, Cl. D28-2.000.
Tovey, Geoffrey D., to Smith Kline & French Laboratories Limited. Pharmaceutical tablet. 285,491, 9-2-86, Cl. D28-2.000.
Tovey, Geoffrey D., to Smith Kline & French Laboratories Limited. Pharmaceutical tablet. 285,492, 9-2-86, Cl. D28-2.000.
Tovey, Geoffrey D., to Smith Kline & French Laboratories Limited. Pharmaceutical tablet. 285,493, 9-2-86, Cl. D28-2.000.
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Webber, Robert R. Fence bracket. 285,410, 9-2-86, Cl. D8-363.000.
Wiens, Peter. Outdoor advertising sign. 285,456, 9-2-86, Cl. D20-39.000.
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Wilson, Gary R. Domestic egg boiler. 285,403, 9-2-86, Cl. D7-354.000.
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Zimmermann, Anso, to Rotpunkt Dr. Anso Zimmerman. Vacuum jug. 285,400, 9-2-86, Cl. D7-317.000.

LIST OF STATUTORY INVENTION REGISTRATIONS

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STATUTORY INVENTION REGISTRATIONS WERE ISSUED ON THE 2ND DAY OF SEPTEMBER, 1986

Allen, Michael G.; Faecher, Howard; and McCallam, Dennis H., to United States of America, Army. Random beam positioning surveillance process. H126, 9-2-86, Cl. 343-16.00R.

Antonuzzi, Anthony P.; Hagel, William E.; Lawson, Donald M.; and Herman, Richard S., to United States of America, Army. Initiator assembly. H124, 9-2-86, Cl. 102-254.000.

AT&T Bell Laboratories: *See—*
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Biggs, Ronald D.; Waddell, Richard E.; and Woodard, Kenneth B., to AT&T Bell Laboratories. Synthesized sound telephone alerting means. H118, 9-2-86, Cl. 179-84.00T.

Central Sprinkler Corporation: *See—*
Pieczykolan, George S., H121, Cl. 169-37.000.

Chrysler Corporation: *See—*
Corwin, John M., H120, Cl. 29-421.00M.

Corwin, John M., to Chrysler Corporation. Method of electroforming a ceramic faced workpiece. H120, 9-2-86, Cl. 29-421.00M..

Down, Michael G.: *See—*
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Furutachi, Nobuo; Sato, Tadahisa; Kawagishi, Toshio; and Nakazyo, Kiyoshi, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. H131, 9-2-86, Cl. 430-553.000.

Graham, John M. Air brake with collet locked push rod and collet deactuator. H117, 9-2-86, Cl. 92-14.000.

Hagel, William E.: *See—*
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Hansen, David N., to United States of America, Army. Modular armor support. H129, 9-2-86, Cl. 89-36.040.

Herman, Richard S.: *See—*
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Huxsol, Robert D.; and Snyder, Leon J., to United States of America, Air Force. Printed wiring board circuit isolator tool. H133, 9-2-86, Cl. 29-832.000.

Kawagashi, Toshio; Nakazyo, Kiyoshi; and Morigaki, Masakazu, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. H122, 9-2-86, Cl. 430-546.000.

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Keeton, Alvin R.; and Down, Michael G., to United States of America, Energy. Passive emergency core cooling system for a liquid metal fast. H119, 9-2-86, Cl. 376-299.000.

Lawson, Donald M.: *See—*
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Ohtani, Hisao; and Maruyamano, Satoru, H132, Cl. 192-48.100.

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McDermott, Daniel E.; and Piekarski, Stanley, to Du Pont de Nemours, E. I., and Company. Tetrafluoroethylene hexafluoropropylene copolymer modified with perfluoropropyl vinyl ether. H130, 9-2-86, Cl. 526-247.000.

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Nordquist, Paul E. R., Jr., to United States of America, America. Etch and polish for metal halides. H125, 9-2-86, Cl. 252-79.400.

Ohtani, Hisao; and Maruyamano, Satoru. Twin-plate clutch. H132, 9-2-86, Cl. 192-48.100.

Palmer, Robert B., to United States of America, Energy. Charged particle accelerator grating. H116, 9-2-86, Cl. 250-396.00R.

Pieczykolan, George S., to Central Sprinkler Corporation. Quick release valve for sprinkler head. H121, 9-2-86, Cl. 169-37.000.

Piekarski, Stanley: *See—*
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Routt, Kenneth R., to United States of America, Energy. Jet-controlled freeze valve for use in a glass melter. H128, 9-2-86, Cl. 373-35.000.

Sato, Tadahisa: *See—*
Furutachi, Nobuo; Sato, Tadahisa; Kawagishi, Toshio; and Nakazyo, Kiyoshi, H131, Cl. 430-553.000.

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Skolnik, Lyn H.; Roosild, Sven A.; and Shepherd, Freeman D., Jr., to United States of America, Air Force. Buried junction enhanced Schottky barrier device. H134, 9-2-86, Cl. 357-15.000.

Smith, Thomas V., to United States of America, Army. Gun tube, screw thread, sectoring device. H127, 9-2-86, Cl. 409-304.000.

Snyder, Leon J.: *See—*
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Waddell, Richard E.: *See—*
Biggs, Ronald D.; Waddell, Richard E.; and Woodard, Kenneth B., H118, Cl. 179-84.00T.

Wallace, John P.; and Lowry, Hugh R. Electromagnetic levitation casting apparatus having improved levitation coil assembly. H135, 9-2-86, Cl. 164-502.000.

Woodard, Kenneth B.: *See—*
Biggs, Ronald D.; Waddell, Richard E.; and Woodard, Kenneth B., H118, Cl. 179-84.00T.

Wright, William H., Jr., to United States of America, Army. Self-switching electromagnetic launcher for repetitive operation. H123, 9-2-86, Cl. 89-8.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 2ND DAY OF SEPTEMBER, 1986

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Staetz, Charles A. Method for control of soil-borne insects employing the pyrethroid(2-methyl-[1,1'-biphenyl]-3-yl)methyl 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate. T107,001, 9-2-86, Cl. 514-531.000.

CLASSIFICATION OF PATENTS

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28 4,608,768
68 4,608,769

CLASS 40

152 4,608,770
427 4,608,771
495 4,608,772
606 4,608,773

CLASS 43

114 4,608,774

CLASS 44

53 4,609,376
56 4,609,377
57 4,609,378
63 4,609,379

CLASS 47

1 R 4,608,775
58 4,608,776

CLASS 49

214 4,608,777
352 4,608,778
374 4,608,779
400 4,608,780
468 4,608,781

CLASS 51

80 B 4,608,782
127 4,608,783
237 R 4,608,784
298 4,609,380
4,609,381
4,609,382

CLASS 52

2 4,608,785
16 4,608,786
20 4,608,787
64 4,608,788
81 4,608,789
4,608,790
90 4,608,791
199 4,608,792
235 4,608,793
288 4,608,794
309.12 4,608,795
399 4,608,796
581 4,608,798
582 4,608,799
656 4,608,800
664 4,608,801
788 4,608,802

CLASS 53

202 4,608,803
262 4,608,804
308 4,608,805
314 Re.32,237
4,608,806
399 4,608,807
436 4,608,808
471 4,608,809
504 4,608,797
551 4,608,810

CLASS 54

44 4,608,811
4,608,812

CLASS 55

16 4,609,383
40 4,609,384
193 4,609,385
223 4,609,386
320 4,609,387

CLASS 56

338 4,608,813

CLASS 57

7 4,608,814
22 4,608,815
4,608,816
213 4,608,817

CLASS 60

39.12 4,608,818
39.281 4,608,820
39.83 4,608,819
203.1 4,608,821
242 4,608,822
325 4,608,824
361 4,608,823
545 4,608,825
547.1 4,608,826
605 4,608,827
606 4,608,828
643 4,608,829

CLASS 62

7 4,608,830
12 4,609,388
17 4,609,389
21 4,609,390
55 4,608,831
140 4,608,832
228.1 4,608,833
244 4,608,834
255 4,608,835
325 4,608,836
400 4,608,837

CLASS 63

29 R 4,608,838

CLASS 65

104 4,609,391
134 4,609,392
229 4,609,393

CLASS 66

13 4,608,839
30 4,608,840
104 4,608,841

CLASS 70

358 4,608,842

CLASS 71

90 4,609,394
4,609,395
92 4,609,396
4,609,397
93 4,609,398
94 4,609,399

CLASS 72

4 4,608,843
43 4,608,844
44 4,608,845
111 4,608,846
148 4,608,847
184 4,608,848
217 4,608,849
240 4,608,850
364 4,608,851
389 4,608,852
434 4,608,853

CLASS 73

7 4,608,854
35 4,608,855
37.7 4,608,856
40.5 R 4,608,857
40.7 4,608,866
49.8 4,608,858
115 4,608,860
151 4,608,861
153 4,608,859
162 4,608,862
178 T 4,608,863
202 4,608,864
204 4,608,865
462 4,608,867
606 4,608,868
644 4,608,869
708 4,608,870
861.04 4,608,871
862.23 4,608,872

CLASS 74

5.41 4,608,874
64 4,608,875
388 PS 4,608,876
473 R 4,608,877
474 4,608,879
479 4,608,880
492 4,608,881
548 4,608,882
574 4,608,883
594.2 4,608,878
665 B 4,608,884
689 4,608,885
866 4,608,873

CLASS 75

46 4,609,400
65 ZM 4,609,402
252 4,609,401

CLASS 81

15.9 4,608,886
128 4,608,887
313 4,608,888

CLASS 82

14 R 4,608,889

CLASS 83

49 4,608,890
56 4,608,891
168 4,608,892
171 4,608,893
322 4,608,894
345 4,608,895
431 4,608,896
663 4,608,897
745 4,608,898
4,608,899
766 4,608,900
834 4,608,901
875 4,608,902

CLASS 84

1.01 4,608,903
304 4,608,904
313 4,608,905
4,608,906

CLASS 89

1.815 4,608,907
8 4,608,908
196 4,608,909

CLASS 91

409 4,608,910
445 4,608,911

CLASS 92

5 R 4,608,912
134 4,608,913

CLASS 98

2.06 4,608,914
2.12 4,608,915

CLASS 99

283 4,608,916
340 4,608,917
450.4 4,608,918
450.6 4,608,919
451 4,608,920
455 4,608,921

CLASS 100

264 4,608,922

CLASS 101

91 4,608,923
170 4,608,924
411 4,608,925

CLASS 102

275.4 4,608,926
521 4,608,927

CLASS 104

3 4,608,928
44 4,608,929
180 4,608,930

CLASS 105

248 4,608,931

CLASS 106

122 4,609,403
288 Q 4,609,404

CLASS 109

56 4,608,932

CLASS 111

85 4,608,933

CLASS 112

79 A 4,608,935
80.60 4,608,934
121.12 4,608,936
121.13 4,608,937
121.29 4,608,938
260 4,608,939

CLASS 114

315 4,608,940

CLASS 118

63 4,608,941
316 4,608,942
718 4,608,943

CLASS 122

4 D 4,608,944
407 4,608,945

CLASS 123

2 4,608,946
41.39 4,608,947
52 M 4,608,948
73 A 4,608,949
195 C 4,608,950
197 AC 4,608,951
198 F 4,608,952
335 4,608,953
352 4,608,954
408 4,608,955
417 4,608,956
467 4,608,957
605 4,608,958

CLASS 124

24 R 4,608,959

CLASS 126

21 A 4,608,961
211 4,608,962
307 R 4,608,963
431 4,608,960
438 4,608,964

CLASS 127

3 4,609,405

CLASS 128

4 4,608,965
4,608,966
61 4,608,967
62 A 4,608,968
71 4,608,969
80 J 4,608,970
85 4,608,971
92 EB 4,608,972
134 4,608,973
136 4,608,974
202.13 4,608,975
204.26 4,608,976
303 B 4,608,977
303.1 4,608,978
4,608,979
4,608,980
305 4,608,981
321 4,608,982
328 4,608,983
344 4,608,984
419 R 4,608,985
581 4,608,988
633 4,608,990
639 4,608,987
653 4,608,991
654 4,608,992
660 4,608,989
663 4,608,993
670 4,608,994
713 4,608,995
760 4,608,996
763 4,608,997
782 4,608,998
786 4,608,986

CLASS 131

336 4,608,999

CLASS 134

2 4,609,406
62 4,609,000
4,609,001
4,609,002

CLASS 136

244 4,609,770
249 4,609,771
254 4,609,772

CLASS 137

2 4,609,003
38 4,609,004
68.1 4,609,005
119 4,609,006
270 4,609,007
488 4,609,008
561 A 4,609,009
587 4,609,010
624.15 4,609,011
625.66 4,609,012
637 4,609,013

CLASS 138

45 4,609,014

CLASS 139

54 4,609,015
91 4,609,016

CLASS 141

1 4,609,017

CLASS 144

3 K 4,609,018
208 D 4,609,021
208 E 4,609,019
4,609,020

CLASS 148

1.5 4,609,407
2 4,609,408
12 C 4,609,412
13 4,609,409
142 4,609,410
171 4,609,411
175 4,609,413
179 4,609,414

CLASS 149

2 4,609,415

CLASS 152

209 R 4,609,022
454 4,609,023
527 4,609,024

CLASS 156

53 4,609,416
69 4,609,417
87 4,609,418
152 4,609,419
272.6 4,609,420
442.1 4,609,421
502 4,609,422
555 4,609,423
613 4,609,424
617 SP 4,609,425
626 4,609,426
633 4,609,427
643 4,609,428
656 4,609,429

CLASS 157

1 4,609,025
13 4,609,026

CLASS 159

29 4,609,430

CLASS 160

207 4,609,027

CLASS 162

135 4,609,431
141 4,609,432
145 4,609,433
168.1 4,609,434
203 4,609,435

CLASS 164

34 4,609,028
122 4,609,029
137 4,609,030
169 4,609,033
270.1 4,609,031
312 4,609,032

CLASS 165

1 4,609,034
2 4,609,035
10 4,609,036
61 4,609,037
80.3 4,609,040
104.12 4,609,038
174 4,609,039

CLASS 166

62 4,609,041
187 4,609,042
268 4,609,043
270 4,609,044
312 4,609,045
341 4,609,046

CLASS 169

38 4,609,047
61 4,609,048

CLASS 171

63 4,609,049
65 4,609,050

CLASS 172

266 4,609,051

CLASS 173

91 4,609,052
104 4,609,053
118 4,609,054
162 H 4,609,055

CLASS 174

92 4,609,773
152 GM 4,609,774
152 R 4,609,775

CLASS 175

4 4,609,056
4.6 4,609,057

CLASS 177

1 4,609,058
50 4,609,059
136 4,609,060
180 4,609,061
256 4,609,062

CLASS 178

18 4,609,776
22.08 4,609,777

CLASS 179

2 A 4,609,780
2 DP 4,609,778
2 R 4,609,779
16 AA 4,609,781
18 HB 4,609,782
84 A 4,609,783
115.5 DV 4,609,784
146 R 4,609,785
156 R 4,609,786
170.2 4,609,787
170.6 4,609,788
175.2 D 4,609,789
189 R 4,609,790

CLASS 180

69.23 4,609,063
233 4,609,064
261 4,609,065

CLASS 181

121 4,609,066
211 4,609,067
226 4,609,068
230 4,609,069

CLASS 182

18 4,609,070
152 4,609,071

CLASS 184

6.11 4,609,072
7.4 4,609,073
81 4,609,074

CLASS 188

5 4,609,075
71.5 4,609,076
73.38 4,609,077
73.43 4,609,078
73.45 4,609,079
171 4,609,080
307 4,609,081
315 4,609,082
378 4,609,083

CLASS 190

110 4,609,084

CLASS 192

70.23 4,609,085
70.27 4,609,086
85 CA 4,609,087
106.1 4,609,088
138 4,609,089

CLASS 193

47 4,609,090

CLASS 198

347 4,609,091
367 4,609,092
378 4,609,093
380 4,609,094
460 4,609,095
464.4 4,609,096
628 4,609,097
781 4,609,098
833 4,609,099
854 4,609,100

CLASS 200

5 A 4,609,791
4,609,792
16 D 4,609,793
24 4,609,794
61.19 4,609,795
84 C 4,609,796
144 R 4,609,797
148 R 4,609,798
153 G 4,609,799

CLASS 203

6 4,609,436

CLASS 204

28 4,609,437
72 4,609,438
74 4,609,439
76 4,609,440
77 4,609,441
95 4,609,442
104 4,609,443
157.6 4,609,444
165 4,609,445
181.7 4,609,446
192 E 4,609,447
197 4,609,448
206 4,609,449
217 4,609,450
265 4,609,451
425 4,609,452
4,609,453
427 4,609,454

CLASS 206

45.33 4,609,101
216 4,609,102
328 4,609,103
334 4,609,104
444 4,609,105
509 4,609,106
610 4,609,107

CLASS 208

112 4,609,456
311 4,609,457
412 4,609,455

CLASS 209

581 4,609,108
636 4,609,109
663 4,609,110

CLASS 210

85 4,609,458
91 4,609,459
188 4,609,460
195.2 4,609,461
232 4,609,462
238 4,609,463
244 4,609,466
321.3 4,609,464
323.2 4,609,465
396 4,609,467
490 4,609,468
609 4,609,469
725 4,609,470
748 4,609,471
750 4,609,472

CLASS 211

1.5 4,609,111
45 4,609,112

CLASS 215

1 R 4,609,113
220 4,609,114
252 4,609,115

CLASS 217

12 R 4,609,116

CLASS 219

10.55 D 4,609,800
10.55 R 4,609,801
56 4,609,802
69 W 4,609,803
74 4,609,804
93 4,609,805
95 4,609,806
121 EM 4,609,809
121 LG 4,609,807
121 PR 4,609,808
121 PT 4,609,810
302 4,609,811

CLASS 220

1 T 4,609,117
3 4,609,118
3.5 4,609,119
69 4,609,120
211 4,609,122
234 4,609,121
258 4,609,123
260 4,609,124
324 4,609,125
374 4,609,126

CLASS 222

66 4,609,127
129 4,609,128
145 4,609,129
207 4,609,130
278 4,609,131

CLASS 223

96 4,609,132

CLASS 224

317 4,609,133

CLASS 227

112 4,609,134
130 4,609,135
136 4,609,136

CLASS 228

47 4,609,137
161 4,609,138
170 4,609,139

CLASS 229

2.5 EC 4,609,141
2.5 R 4,609,140
17 SC 4,609,142
40 4,609,143

CLASS 235

487 4,609,812

CLASS 238

1 4,609,144

CLASS 239

36 4,609,245
77 4,609,145
123 4,609,146
183 4,609,147
224 4,609,148
310 4,609,149
397.5 4,609,150
656 4,609,151
659 4,609,152
665 4,609,153
713 4,609,154

CLASS 241

30 4,609,155
199.12 4,609,156
243 4,609,157
300 4,609,158

CLASS 242

18 DD 4,609,159
54 R 4,609,160
55 4,609,161
56 R 4,609,162
71 4,609,163
199 4,609,164

CLASS 244

17.19 4,609,165
118.5 4,609,166
137 A 4,609,167
4,609,168
169 4,609,169

CLASS 248

71 4,609,170
74.3 4,609,171
222.1 4,609,172
225.1 4,609,173
465 4,609,174
519 4,609,175

CLASS 250

201 4,609,813
4,609,814
222.1 4,609,815
227 4,609,816
231 SE 4,609,817
234 4,609,818
237 G 4,609,819
255 4,609,821
338 4,609,820
352 4,609,822
370 4,609,823
578 4,609,824
4,609,825

CLASS 251

30.04 4,609,176
175 4,609,177
229 4,609,178

CLASS 252

8.55 4,609,477
8.55 B 4,609,475
8.55 D 4,609,474
4,609,478
8.55 R 4,609,476
8.551 4,609,479
8.6 4,609,473
32.7 E 4,609,480
73 4,609,481
106 4,609,482
180 4,609,483
184 4,609,484
299.61 4,609,485
310 4,609,486
315.5 4,609,487
344 4,609,488
355 4,609,489
358 4,609,490
522 R 4,609,491
4,609,492
546 4,609,493

CLASS 254

102 4,609,179
134.3 FT 4,609,181
134.3 R 4,609,180
228 4,609,182

CLASS 256

1 4,609,183
14 4,609,184
65 4,609,185

CLASS 260

243.3 4,609,494
397.4 4,609,496
408 4,609,497
410.9 R 4,609,498
414 4,609,499
423 4,609,500
463 4,609,501
509 4,609,503
549 4,609,504

CLASS 261

41 R 4,609,505
44 A 4,609,506

CLASS 264

1.1 4,609,507
29.6 4,609,508
38 4,609,509
39 4,609,510
51 4,609,511
53 4,609,512
122 4,609,513
153 4,609,514
174 4,609,515
255 4,609,516
291 4,609,517
504 4,609,518
510 4,609,519

CLASS 267

91 4,609,186

CLASS 269

8 4,609,187

CLASS 272

93 4,609,188
118 4,609,189
130 4,609,190
137 4,609,191
144 4,609,192
145 4,609,193

CLASS 273

73 D 4,609,194
73 J 4,609,198
85 F 4,609,195
128 A 4,609,196
184 B 4,609,197

CLASS 279

1 B 4,609,199

CLASS 280

5.2 4,609,200
20 4,609,201
276 4,609,202
461 A 4,609,203
766.1 4,609,204
808 4,609,205

CLASS 281

33 4,609,206

CLASS 283

70 4,609,207
81 4,609,208

CLASS 285

24 4,609,209
47 4,609,214
114 4,609,210
325 4,609,211
334 4,609,212
419 4,609,213

CLASS 290

1 R 4,609,826
44 4,609,827

CLASS 292

144 4,609,215
262 4,609,216
307 B 4,609,217
320 4,609,218

CLASS 294

82.24 4,609,219
87.1 4,609,220

CLASS 296

65 R 4,609,221
218 4,609,222
222 4,609,223

CLASS 297

188 4,609,224
440 4,609,225
452 4,609,226

CLASS 299

93 4,609,227

CLASS 300

4 4,609,228

CLASS 303

6 C 4,609,229
52 4,609,230

CLASS 307

44 4,609,828
150 4,609,829
202.1 4,609,830
270 4,609,831
4,609,832
297 4,609,833
443 4,609,834
450 4,609,835
451 4,609,836
455 4,609,837
465 4,609,838
542 4,609,839

CLASS 310

58 4,609,840
75 R 4,609,841
112 4,609,842
313 A 4,609,843
321 4,609,844
357 4,609,845

CLASS 312

15 4,609,231
16 4,609,232
219 4,609,233
296 4,609,234
330 R 4,609,235
4,609,236
351 4,609,237

CLASS 313

384 4,609,846
413 4,609,847
417 4,609,848

CLASS 315

200 R 4,609,849
219 4,609,850
241 P 4,609,851
278 4,609,852

CLASS 318

363 4,609,853
471 4,609,854
561 4,609,855
640 4,609,856
696 4,609,857
778 4,609,858
810 4,609,859

CLASS 320

14 4,609,860
32 4,609,861

CLASS 322

90 4,609,862

CLASS 323

223 4,609,863
267 4,609,864

CLASS 324

51 4,609,865
52 4,609,866
158 D 4,609,867
158 MG 4,609,868
208 4,609,869
225 4,609,870
244 4,609,871
306 4,609,872
338 4,609,873
438 4,609,874
455 4,609,875

CLASS 330

4.3 4,609,876
9 4,609,877
136 4,609,878
276 4,609,879
308 4,609,880

CLASS 331

1 A 4,609,881
65 4,609,882
96 4,609,883
109 4,609,884
158 4,609,885

CLASS 332

19 4,609,886

CLASS 333

28 R 4,609,887
34 4,609,888
100 4,609,889
187 4,609,890
195 4,609,891
204 4,609,892
218 4,609,893

CLASS 334

11 4,609,894

CLASS 335

17 4,609,895
80 4,609,896
133 4,609,897
202 4,609,898
230 4,609,899

CLASS 336

58 4,609,900
65 4,609,901

CLASS 337

30 4,609,902

CLASS 338

22 SD 4,609,903

CLASS 339

12 R 4,609,238
15 4,609,239
17 CF 4,609,241
17 LC 4,609,242
17 LM 4,609,240
17 M 4,609,243
32 M 4,609,244
59 M 4,609,246
60 M 4,609,247
103 R 4,609,248
263 E 4,609,249

CLASS 340

52 R 4,609,904
58 4,609,905
347 C 4,609,906
347 DD 4,609,907
365 S 4,609,908
541 4,609,909
545 4,609,910
572 4,609,911
603 4,609,912
622 4,609,913
660 4,609,914
671 4,609,915
703 4,609,916
729 4,609,917
753 4,609,918
792 4,609,919
825.51 4,609,920

CLASS 343

6.8 R 4,609,922
411 4,609,921
897 4,609,923

CLASS 346

1.1 4,609,924
4,609,925
76 PH 4,609,926
154 4,609,927
208 4,609,928

CLASS 350

6.4 4,609,250
6.8 4,609,251
96.12 4,609,252
174 4,609,253
286 4,609,254
341 4,609,255
346 4,609,256
376 4,609,257
395 4,609,258
417 4,609,259
430 4,609,260
432 4,609,261
4,609,262
454 4,609,263
529 4,609,264
605 4,609,265
613 4,609,266

CLASS 351

163 4,609,267

CLASS 352

140 4,609,942

CLASS 353

25 4,609,268

CLASS 354

149.11 4,609,269
195.12 4,609,270

202 4,609,271
225 4,609,272
271.1 4,609,273
400 4,609,274
435 4,609,275

CLASS 355

3 DD 4,609,280
3 FU 4,609,278
3 R 4,609,276
4,609,277
4,609,281
3 SH 4,609,279
4,609,282
14 R 4,609,283
68 4,609,284
75 4,609,285

CLASS 356

73 4,609,286
124 4,609,287
218 4,609,288
326 4,609,289
345 4,609,290
418 4,609,291

CLASS 357

23.13 4,609,931
23.4 4,609,929
23.7 4,609,930
25 4,609,932
38 4,609,933
42 4,609,934
51 4,609,935
68 4,609,936
79 4,609,937

CLASS 358

26 4,609,938
101 4,609,939
111 4,609,940
136 4,609,941
213 4,609,943
228 4,609,944
237 4,609,945
286 4,609,946
310 4,609,947
338 4,609,948

CLASS 360

28 4,609,949
29 4,609,950
46 4,609,951
70 4,609,952
78 4,609,953
4,609,954
93 4,609,955
100 4,609,956
101 4,609,957
106 4,609,958
4,609,959
108 4,609,960
114 4,609,961
131 4,609,962
133 4,609,963
135 4,609,964

CLASS 361

160 4,609,965
283 4,609,966
315 4,609,967
320 4,609,968
323 4,609,969
399 4,609,970
433 4,609,971
4,609,972
4,609,973

CLASS 362

32 4,609,974
125 4,609,975
202 4,609,976
267 4,609,977
335 4,609,978
427 4,609,979

CLASS 363

20 4,609,980
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89 4,609,982
98 4,609,983

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200 4,609,985
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433 4,609,987
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468 4,609,989
484 4,609,990
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508 4,609,992
522 4,609,993
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189 4,610,000
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228 4,610,003
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104 4,610,007

CLASS 369

34 4,610,008
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CLASS 370

32 4,610,010
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CLASS 371

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CLASS 372

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CLASS 373

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137 4,610,016
156 4,610,017

CLASS 374

144 4,609,292

CLASS 375

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CLASS 376

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173 4,609,521
212 4,609,522
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417 4,609,524

CLASS 377

58 4,610,019

CLASS 378

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CLASS 381

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CLASS 382

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CLASS 383

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293 4,609,308

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145 4,609,532

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598 4,609,694

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164 4,609,552

CLASS 425

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145 4,609,337
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547 4,609,341

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683 4,609,577

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D2—	232	285,381		332	285,401			285,421		60	285,441		85	285,461		124	285,481
	283	285,382		335	285,402	D11—	4	285,422		66	285,442		96	285,462			285,482
	405	285,383		354	285,403		28	285,423		77	285,443		108	285,463			285,483
	422	285,384		377	285,404	D12—	107	285,424		86	285,444		111	285,464	D24—	1.1	285,484
		285,385		412	285,405		110	285,425		114	285,445		136	285,465		17	285,485
		285,386	D8—	1	285,406		158	285,426	D15—	1	285,446			285,466		29	285,486
		285,387		5	285,407		181	285,427		7	285,447		147	285,467			285,487
	431	285,388		98	285,408		182	285,428		127	285,448			285,468	D26—	86	285,488
D4—	104	285,389		356	285,409		196	285,429	D16—	6	285,449			285,469			285,489
		285,390		363	285,410			285,430			285,450		149	285,470	D28—	2	285,490
D6—	328	285,391		366	285,411	D13—	12	285,431		31	285,451			285,471			285,491
	399	285,392	D9—	337	285,413		24	285,432		128	285,452		195	285,472			285,492
	412	285,393		345	285,412			285,433	D17—	22	285,453		214	285,473			285,493
	426	285,394		420	285,414			285,434	D19—	3	285,454		228	285,474			285,494
	494	285,395		438	285,415		30	285,435	D20—	9	285,455	D23—	2	285,475		46	285,495
	536	285,396		447	285,416	D14—	53	285,436		39	285,456		7	285,476	D29—	8	285,496
	545	285,397	D10—	33	285,417			285,437	D21—	34	285,457		18	285,477			285,497
	567	285,398		40	285,418			285,438		59	285,458		19	285,478	D30—	16	285,498
D7—	138	285,399			285,419		59	285,439		65	285,459		20	285,479		35	285,499

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